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
Closing of Summer Session classes, 5 p.m.
Opening of Independent Study Unit for law and graduate students
Closing of Independent Study Unit

1973
June 4, Monday
June 5, Tuesday
July 4, Wednesday
July 21, Friday
July 30, Monday
August 24, Friday

FIRST SEMESTER
Beginning of Registration, 8 a.m.
Opening of classes, 7:30 a.m.
University holiday; offices closed
Homecoming: classes suspended except for classes meeting on Saturdays only
Beginning of Thanksgiving recess, 10 a.m.
University holiday; offices closed
Resumption of classes, 7:30 a.m.
Closing of First Semester classes, 10 p.m.
Beginning of Examination Week, 7:30 a.m.
Closing of Examination Week
University holiday; offices closed
Univeristy holiday; offices closed

1972-73
August 28, Monday
August 31, Thursday
September 4, Monday
October 22, Saturday
November 19, Wednesday
November 22—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.
Closing of Second Semester classes
Beginning of Examination Week, 7:30 a.m.
Closing of Examination Week
University Commencement, 9:30 a.m.
University Holiday; offices closed

1973-74
January 11, Thursday
January 15, Monday
February 25, Sunday
March 9, Friday
March 10, Saturday
March 16, Monday
May 4, Friday
May 7, Tuesday
May 16, Wednesday
May 25, Friday
May 28, Monday

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

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

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. Each college's enrollment is approximately one-fourth of the University's total.

Forty-six of the University's undergraduate students are Iowa residents. All Iowa counties, all other states and more than 70 foreign countries are represented in the University's student body.

The male-female ratio among undergraduate students is 11:9. Sixty-one percent 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-fifth plan to go to work immediately after graduation. 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 taught 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 these "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
- 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
- Teacher Education—National Council for Accreditation of Teacher Education

**Schools**

- Library Science—American Library Association
General Information

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-
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 Independent Study Unit of from one to four additional weeks for students 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 students 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 misconduct 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 themselves 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 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 University 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, briefly describe the prospective applicant's high school and college 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)
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-financed students located overseas:
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 probationary summer session; and for denying admission to applicants who do not meet minimal standards.
Placement—As a basis for placing some students from 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 senior year of 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

Graduate Study in Business (ATGB). Prospective applicants to the college 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 he 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 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</th>
<th>Half</th>
<th>Quarter</th>
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<tbody>
<tr>
<td></td>
<td>(9 or more</td>
<td>5-8</td>
<td>(1-4)</td>
</tr>
<tr>
<td></td>
<td>sem. hrs</td>
<td>sem. hrs</td>
<td>sem. hrs</td>
</tr>
<tr>
<td>Business Administration</td>
<td>$310</td>
<td>$198</td>
<td>$123</td>
</tr>
<tr>
<td>Dentistry</td>
<td>435</td>
<td>273</td>
<td>165</td>
</tr>
<tr>
<td>Education (see &quot;College of Liberal Arts&quot; and &quot;Graduate College&quot;)</td>
<td>310</td>
<td>198</td>
<td>123</td>
</tr>
<tr>
<td>Engineering</td>
<td>355</td>
<td>225</td>
<td>138</td>
</tr>
<tr>
<td>Graduate</td>
<td>355</td>
<td>225</td>
<td>138</td>
</tr>
<tr>
<td>Law</td>
<td>310</td>
<td>198</td>
<td>123</td>
</tr>
<tr>
<td>Liberal Arts</td>
<td>310</td>
<td>198</td>
<td>123</td>
</tr>
</tbody>
</table>
### General Information

| Medicine | 435 | 273 | 165 |
| Nursing | 310 | 198 | 123 |
| Pharmacy | 310 | 198 | 123 |

#### Nonresident

<table>
<thead>
<tr>
<th>Full</th>
<th>Half</th>
<th>Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>(9 or more sem. hrs.)</td>
<td>(5–8 sem. hrs.)</td>
<td>(1–4 sem. hrs.)</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 (see &quot;College of Liberal Arts&quot; and &quot;Graduate College&quot;)</td>
<td>625</td>
<td>387</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; and of libraries, laboratories and gymnasium; 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-sectory 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 $10.00 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 $75.00 fee for reinstatement.

#### Foreign Students

With a population in excess of 20,000 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 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 information and the Certificate of Eligibility (Immigration Form I-20 or DS-6). 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 $3,600 (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 for funds at 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 at 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 "461" 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 courses "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
6C 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 Pedodontics
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 Interdivisional

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
16 Art Education
1U Art History
18 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
22M Mathematics
22S Statistics
23 Military Science
23A Aerospace Military Studies
24 Museum 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
37 Zoology
38 Portuguese
39 Chinese and Oriental Studies
39J Japanese
41 Russian
42 Social Work
44 Geography
45 American Civilization
48 Comparative Literature
50 Hospital and Health Administration
51 General Science
58 Social Studies
102 Urban and Regional Planning
103 Linguistics
104 Recreation Education
108 School of Letters

113 Anthropology

College of Medicine
50 Medicine Non-Specialized
51 Anatomy
52 Microbiology
53 Dermatology and Syphilology
54 Preventive Medicine and Environmental Health
55 Neurology
56 Nutrition
56 Obstetrics and Gynecology
57 Ophthalmology
58 Otolaryngology and Maxillofacial Surgery
59 Pathology
60 Pediatrics
61 Pharmacology
62 Physiology
63 Psychiatry
64 Radiology
65 Surgery
66 Orthopedic Surgery
67 Radiology Research Laboratory
70 Internal Medicine
71 Urology
72 Oral Surgery
73 Biochemistry
74 Physical Therapy
75 Family Practice
76 Anesthesiology

96 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 semester or 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 firm policy of the University that householders shall rent to all students on the basis of their individual merits as persons, without calculation or 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 investigation of complaints for violations of it.

University Residence Halls

University residence hall furnishings, facilities and services are designed to provide a pleasant and safe environment 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 I and II; and in the Clinton Street Residence Halls (east campus), which include Burge Hall, Currier Hall, Daum 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, brown bag 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 advisor in each living unit. Each unit has its own student governing body and is represented to the government of its residence hall.

Student-initiated residence hall programs and activities provide a wide range of opportunities for the social, cultural, recreational and athletic interests of students.

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 1972-73 academic year was $1.14 for a single, $1.20 for a double and $1.27 for a triple room, with full board. Rates for the several available accommodation plans and room 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; unfurnished, 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.
Housing

Heweys 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 1 1/2 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 may apply for married-student housing before they complete admission, 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 appointments 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' right 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 (medicines), Delta Sigma Delta (dentistry), Nu Sigma Nu (medicine), Phi Beta Pi (medicine), Phi Rho Sigma (medicine) and Psi Omega (dentistry).

Sororities
The 15 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 commencements and convocation ceremonies, and publishing the University Catalog.

Admissions
All inquiries, transcripts, evaluations of transfer credit and applications for admission into any college of the University should be directed to the Office of Admissions. Other responsibilities of this office include the orientation of new students and foreign student admission counseling.

Registrar
The Office of the Registrar determines the residence status of each student, issues clearance, 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 student 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 advisor 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 deans or their designates. 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, Admission Test for Graduates, 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 evaluations. 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 Influenza care is provided without charge to students requiring medical supervision or 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 treat-
ment 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 prob-
lems may receive needed clinical services from the Speech and
Hearing Clinic without charge. Services include diagnostic ex-
aminations, 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 Cen-
ter, 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, studios for lectures
and concerts, art and sculpture display areas, and, in the adjoin-
ing 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 on various problems of a social or ex-
trascultural 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, Edu-
cational Placement Office and College of Engineering Placement
Bureau cooperate with the colleges and departments in counsel-
ing 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, var-
ious faiths and denominations have established campus centers and
ministries. The Association of Campus Ministers coordin-
ates inter-religious activities and promotes religious conscious-
ness, understanding and commitment.

Intercollegiate Athletics
The University is a member of the Western Intercollegiate Con-
ference (Big Ten), and has athletic programs in football, basket-
ball, track, baseball, swimming, golf, wrestling, tennis, cross
country and gymnastics. Operating policies are determined by
the Board in Council 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 lesson programs in such activi-
ties as karate, tennis, golf, scuba diving and gymnastics. Informal
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, bil-
liards, squashball, tennis, fencing and judo.

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 coor-
dinate as well as participate in most ASP courses. Courses taken
for no credit are free. Regular tuition is charged for credit
courses.
Administrative Staff

Dean Leah W. Darnell
University Librarian: Dale M. Bener
Assistant University Librarian: Richard M. Roebel
Assistant University Librarian: Wayne Rupley
Administrative Assistant: Lowell D. Druffel
Stenographer: Frans S. Hanlin
Assistant Director Emeritus: Grace Van Norten

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 on the second floor containing reader space and a separate collection of some 50,000 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 140,000 volumes, is one of the largest 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, 9,500; Engineering, 36,500; Geology, 20,400; Library Science, 8,000; Mathematics, 24,200; Medical, 92,600; Music, 41,800; Pharmacy, 10,000; Physics, 22,900; Speech Pathology, 4,250; 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; lending rooms for collections of recorded drama, poetry and speeches, 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, and are designed to facilitate comparative studies of social and cultural behavior.

The University's Less-Her Collection, brought together by Luther A. Brewer of Cedar Rapids, Iowa, is considered one of the most complete in existence. It contains 2,385 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 Mark Van Doren Memorial Collection contains approximately 1,700 volumes, of which 3,000 were bequeathed to the University by Mrs. Van Doren 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. Van Doren.

The John Sprague Collection of books on typography was given to the University by John Sprague, a long-time Iowa City printer. The collection includes 1,800 volumes containing type specimens, books important in printing history and volumes illustrating the art and progress of printing through the centuries.

The "Ding" Dunlap Collection comprises 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 Carlin-Lincoln Collection, gathered by Judge James W. Bollinger of Davenport, Iowa, consists of about 4,800 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 concern 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 brochures 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 blanden 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 1788-1797, supplemented by numerous French newspapers and government publications of the time.

The Iowa Authors Collection includes approximately 5,070 books written by Iowans and more than 640 manuscripts.

The "A" 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, Rochester Club Publications, and several inscribed copies.

The Manuscripts Collection includes more than 5,100 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 photographs and correspondence files relating to midwestern economic, political and agricultural history.

The Map Collection contains 56,800 maps, 57,933 indexed aerial photographs, and 1,432 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 1930, 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 folk songs; and the Chautauqua Collection donated by Harry P. Harrington, manager of the Redpath Bureau. The Chautauqua Collection contains several thousand letters and documents descriptive of the Chautauqua movement.

Staff
Acquisitions: Barbara K. Gaeddert, Head; E. Ann Ford; Kathleon B. Wachtel; Consulting: David A. Aamodt; Ruth E. Christ; Mary G. Clark; Kathy Ann Edwards; Karen A. Fischer; Judith K. Groeodyke; Vivian E. Hickman; Karl K. Kahler; Tatjana Lorkovic; George P. Mullaly; Mary E. Neitz; Rosemary E. Ross; Antelene M. Park; Emeritus; Yong Kyih Nyi Mei; Emeritus. Circulation: David D. Hudson, Head; Linda M. Sardarov; Browning Room Librarian; Lillian M. Sega, Rare Books Librarian; Chris Hinton, Head Emeritus. Government Publications: Carolyn W. Kohler, Head; Mary Lee Blaser; William H. Hinkins; Mary R. McKinney; Reference: Julia Bartling, Head; Frank T. Allen; Rebecca L. Johnson; Dorothy M. Kentel; Linda A. Martinez; Keith A. Ragerth; Jean S. Schaal; Ada M. Stoffer. Sociology: Helen S. Clark, Head; Jim E. Cole; Mary E. Horton; Evelyn S. Murphy; Anne D. Roberts; Charlene E. Soile. Special Collections: Francis J. Pakula, Head; Richard S. Green; Robert A. McCown; Karl M. Rogers; Irene Stedl, Emeritus. Departmental Libraries: Art: Harlan L. Siford; Botany-Chemistry: Pauline L. Munn; Business Administration: Peter J. Hartford; Dental: Margaret R. Jarman; Education-Psychology: Anne G. Evans; Sharon B. Morin; Jane M. Phillippe; Geology: Vera J. Bacon; Library Science: Karen S. Hildebrand; Mathematics: Marjorie G. Williams; Medical: Robert W. Croyder; Edwin A. Holton; Julie Van Berg; Music: Rita B. Benson; Elizabeth L. McWilliams; Pharmacy: Sandra Ballasch; Physics and Zoology: Jack B. Dickey; Speech Pathology: Carol Vogt.
College of Liberal Arts

Administrative Staff
Dean: Dewey Bernard Shult
Associate Dean and Director, Advisory Office: Hugh Kale
Assistant Deans: Bernard D. Tuttle
Director of Honors: Rhodes Durling
Associate Director of Honors: J. Richard Watson

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 ideas, 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 Drama, and Art.

The Division of Mathematical Sciences comprises the departments of Computer Science, Mathematics, and Statistics, the latter including the program in actuarial science. The departments share a common undergraduate program offering 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 Literatures, 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 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 nonseniors. 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, high school senior may take comprehensive achievement examinations in a number of subjects.

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 to meet the College of Liberal Arts rhetoric requirement with credit by taking the rhetoric proficiency examinations offered before the course begins. At least two weeks before he or she registers at the University, he 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 take up to 32 semester hours of credit, or exemptions 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 Advising Office.

Pass-Fall Courses

The College permits enrollment in any course on a pass-fall basis, provided the course is outside the student's major field and that the student's advisor and the course instructor approve. Not more than two pass-fall courses may be elected in a semester, and not more than 32 semester hours of work on a pass-fall 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 but 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-
visers 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 professional program is assigned a special advisor in that field. 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 records, class 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 the applicant’s record, 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 college work.

An applicant who is not a high school graduate must submit all data required above, and must 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 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.

Each 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 may 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 means 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 the first academic term in which 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 correspon-
The College of Liberal Arts

A student who enrolls at The University of Iowa must take a minimum of 12 semester hours of credit in courses the University of Iowa considers to be a grade-point average of at least 3.0. The grade-point average is calculated using the following scale:

- A: 4
- B: 3
- C: 2
- D: 1
- F: 0
- W: Withdrawn
- I: Incomplete
- R: Repeat

The cumulative grade-point average is computed by multiplying the number of hours of credit earned in each course by the appropriate grade-point average, totaling the grade-point credit earned to date and dividing the sum by the number of hours of credit attempted, 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 to revert to a grade of C. A student must be replaced by a grade during the next semester's work, in order for it not to revert to a grade of I.

Classification of Students
Freshman—Less than 24 semester hours
Sophomore—24 to 55 semester hours
Junior—66 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 attempted 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, and 1.9 for seniors.

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 student'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 area (literature, social science, natural science, historical-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 150.3 may attempt the written and oral 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 have the option of satisfying the rhetoric requirement by submitting, at the time of entrance, eight semester hours of credit earned at another institution in a course comparable to the rhetoric course 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 (16:253) at the University or satisfactorily 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 a time announced in the course of the term. Up to four semester hours of credit may be awarded for successful completion 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 semester before retaking the examination. Students who have not passed theт 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.

Peterson 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 four semester hours 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 exempted 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 a minimum of one of the eight-semester-hour core courses offered in the core area. However, with the approval of the department, students may be exempted from the core requirement in the major area. The student may also be exempted 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. These 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 course required 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 Science—astronomy, biochemistry, botany, chemistry, geology, meteorology, physiological psychology and/or zoology; and

Social Science—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 elected 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 course requirements for this degree. All requirements 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 chairperson 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. degree 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 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 highest 2%</td>
</tr>
<tr>
<td>Highest distinction</td>
<td>3.50-3.74 next highest 3%</td>
</tr>
<tr>
<td>Distinction</td>
<td>3.25-3.49 next highest 5%</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 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 designations 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 to one of the two-semester "main course" or the one-semester accelerated 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.

181 Rhetoric Main Course
Instruction in reading, writing and speaking
4 s.h.
193 Rhetoric Main Course
Continuation of 191, prerequisite, 181
4 s.h.
193 Rhetoric Advanced Course
An intensive, one-semester course in reading, writing, and speaking; open only to those who give evidence of sufficiently high degree of competence in rhetoric
2 s.h.
199 Rhetoric: Individual Instruction in Writing
Open to any student needing intensive help—and only freshmen recommended by their rhetoric instructor, but appointments necessary in writing who feel they need this help. For full requirements, see Professor Schall, Head, Rhetoric Department
2 s.h.

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 the human organism 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, fencing, flag footwork, golf, gymnastics, handball, ice hockey, judo, lacrosse, life saving, paddleball, home recreation games, rifle, rugby, soccer, skiing, softball, squash, swimming, table tennis, tennis, track and field, tumbling, 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 h.
1922 Physical Education Skills for Men 1 h.
1923 Physical Education Skills for Men 1 h.
1924 Physical Education Skills for Men 1 h.
1925 Physical Education Skills for Men 1 h.
1926 Physical Education Skills for Men 1 h.
1927 Physical Education Skills for Men 1 h.
1928 Physical Education Skills for Men 1 h.
1929 Physical Education Skills for Men 1 h.

Physical Education Skills for Women
1921 Physical Education Skills for Women 2 h.
1922 Physical Education Skills for Women 2 h.
1923 Physical Education Skills for Women 2 h.
1924 Physical Education Skills for Women 2 h.
1925 Physical Education Skills for Women 2 h.
1926 Physical Education Skills for Women 2 h.
1927 Physical Education Skills for Women 2 h.

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 111, 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 which rests on definable assumptions, uses characteristic sets of conventions, and is accessible to different kinds of interpretation.

111 Interpretation of Literature 4 h.
112 Introduction to Literature 4 h.
113 World Literature 4 h.
114 Western Civilization: Ancient to Early Modern 4 h.
115 American Literature 4 h.
116 Shakespeare 4 h.
117 Milton and Other Poets 4 h.
118 Middle Ages and Other European Ages 4 h.
119 Renaissance and Other European Ages 4 h.
120 Romantic and Other European Ages 4 h.
121 Realism and Other European Ages 4 h.
122 Modern and Other European Ages 4 h.
123 World Literature from Afar 4 h.
124 World Literature from Near 4 h.
125 World Literature from the Far East 4 h.
126 World Literature from the Middle East 4 h.
127 World Literature from the Americas 4 h.
128 World Literature from the South Pacific 4 h.
129 World Literature from the Soviet Union 4 h.
130 World Literature from the Latin America 4 h.
131 World Literature from the Caribbean 4 h.
132 World Literature from Africa 4 h.
133 World Literature from the Arab World 4 h.
134 World Literature from the Islamic World 4 h.
135 World Literature from the Jewish World 4 h.
136 World Literature from the Indian World 4 h.
137 World Literature from the Chinese World 4 h.
138 World Literature from the Japanese World 4 h.
139 World Literature from the Korean World 4 h.
140 World Literature from the Philippine World 4 h.
141 World Literature from the Vietnamese World 4 h.
142 World Literature from the Thai World 4 h.
143 World Literature from the Southeast Asian World 4 h.
144 World Literature from the Indonesian World 4 h.
145 World Literature from the Australian World 4 h.
146 World Literature from the New Zealand World 4 h.
147 World Literature from the Maori World 4 h.
148 World Literature from the Polynesian World 4 h.
149 World Literature from the Micronesian World 4 h.
150 World Literature from the Melanesian World 4 h.
151 World Literature from the Polynesian World 4 h.
152 World Literature from the Micronesian World 4 h.
153 World Literature from the Melanesian World 4 h.
154 World Literature from the Polynesian World 4 h.
155 World Literature from the Micronesian World 4 h.
156 World Literature from the Melanesian World 4 h.
157 World Literature from the Polynesian World 4 h.
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179 World Literature from the Micronesian World 4 h.
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181 World Literature from the Polynesian World 4 h.
182 World Literature from the Micronesian World 4 h.
183 World Literature from the Melanesian World 4 h.
184 World Literature from the Polynesian World 4 h.
185 World Literature from the Micronesian World 4 h.
186 World Literature from the Melanesian World 4 h.
Afro-American Studies

Program Chairman: Charlotte T. Darke

Degrees offered: B.A., B.F.A. (Art), Ph.D. (American Civilization, with concentra-
tion in Afro-American Studies).

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

The program is designed to place the black experience in
its historical context. It recognizes the need for both black and
white participation, and it will provide training in a field that
has been ignored for too many years. The ultimate objective 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, offer it as an examination field
at the time of comprehensive examinations and write an interdisci-
plinary dissertation on some aspect of Afro-American culture.

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

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

Staff: professor Bolding, Lane, Dooley, Schoor, Retish (Educa-
tion); Hubbard (Engineering); Kovarsky (Business Administration);
Van Dyke (Political Science); Corrigan, Fabre (American
Civilization); Turner, Houtlin, Aburqash (English); Carter (An-
thropology); McNulty (Geography); Moses (History)

Courses Prioritized with the Afro-American Experience

American Civilization

14.10 Black Poetry Workshop

14.11 Contemporary Black Experience

14.15-16 Afro-American Literature I-II

Same as Religion 14.15-16

14.15 Afro-American History (1816-1865)

Same as History 14.119

14.16 Afro-American History (1866-present)

Same as History 14.118

44.192 African-American Drama

54.192 The Culture of Black America: An Interdisciplinary Approach

An overview of the social, cultural, art, and political experiences which have
influenced the black American

54.211 Seminar: Subject in Afro-American Culture or art.

Exploration and critique of social and historical phenomena which perpetuate and
influence process of racial discrimination

54.212 Alquita in the New World

Same as Anthropology 14.113

44.212 Politics and the Black Writer

44.212 Seminar: Afro-American Literature

44.213 African-American Studies

Anthropology

113.114 Spanish Speaking Peoples of the United States

113.119 Social Anthropology of the Caribbean

113.120 Urban Anthropology

113.120 Peoples of Africa

113.121 Peoples and Cultures of North Africa and the Middle East

Art

26.102 Primitive Art: Africa

Business Administration

68.115 Go Home and Society

68.253 Employment and Society

68.253 Employment Relations and Public Policy

Economics

68.137 Economics of Urban Problems

Education

75.104 Education in newly-developed countries

75.120 Educational Sociology

75.280 Seminar: Value Problems in the Administration of American Education

Same as CTD 120

75.120 Seminar: Development of the School Age Child

75.133 Teaching the Equally-Dowered

2 or 3 h.

2 or 3 h.

3 h.

2 or 3 h.

2 or 3 h.

2 or 3 h.
American Civilization

Geography
44:191 Africa 3 s.h.

History
16:01 Survey of American History 1450-1587 3 or 4 s.h.
16:02 Survey of American History (1577-present) 3 or 4 s.h.

Sociology
*24:128 Race and Ethnic Relations 3 s.h.
*24:176 African Social Structure and Change 3 s.h.
Same as 16:232

Urban and Regional Planning
160:102 Urban Politics 3 s.h.
160:204 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 nonprofessional, liberal education for improved citizenship and rounded personal development. It can also serve as preparation for high school teaching in American literature, American history and the social sciences; and it can furnish 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:
16:01 Survey of American History
16:02 American Revolutionary Period
16:03 The United States in the Middle Period
16:04 Recent American History

16:170 The Northeast 1776-1830 3 s.h.
16:171 The Frontier in American History 3 s.h.
16:172 Afro-American Economic History 3 s.h.
16:177-8 American Foreign Relations 3 s.h.
16:179-80 American Intellectual History 3 s.h.
16:181 Topics in American Social History 3 s.h.
16:183-4 History of Iowa 3 s.h.
16:197-8 Afro-American History 3 s.h.
16:199 Religious and Democratic Traditions of the United States 3 s.h.

Group B
Two semesters in two of these subject areas:
66:01-2 Principles of Economics 3 s.h.
66:11 Labor Economics 3 s.h.
66:13 Introduction to Urban and Regional Economics 3 s.h.
66:157 Problems in Urban Economics 3 s.h.
66:151 American Economic History 3 s.h.
66:161 History of Economic Thought 3 s.h.
77A:10 Introduction to Adult Education 3 s.h.
77B:102 History of American Education 3 s.h.
77B:103 Comparative Education 3 s.h.
77B:107 Philosophies of Education 3 s.h.
77B:108 John Dewey and Education 3 s.h.
76:113 Methods: High School English 3 s.h.
75:170 Methods: High School Social Studies 3 s.h.
44:1 Introduction to Human Geography 3 s.h.
44:30 Introduction to Economic Geography 3 s.h.
44:35 Introduction to Urban Geography 3 s.h.
44:122 Natural Resources of the United States 3 s.h.
44:141 The United States and Canada 3 s.h.
30:1 Introduction to American Politics 3 s.h.
30:100 The American Political System 3 s.h.
30:104 Political Parties 3 s.h.
30:105 The Presidency 3 s.h.
30:106 American Public Policies 3 s.h.
30:107 American Constitutional Law and Politics 3 s.h.
30:148 Legal Behavior 3 s.h.
30:163 American Foreign Policies 3 s.h.
31:1 Elementary Psychology 3 s.h.
31:101 Advanced Social Psychology 3 s.h.
31:103 General Semantics 3 s.h.
34:1 Introduction to Sociology: Principles 3 s.h.
34:2 Introduction to Sociology: Problems 3 s.h.
34:20 Principles of Social Psychology 3 s.h.
34:234 Seminar: Collective Behavior 3 s.h.
34:238 Culture and Personality 3 s.h.
34:256 Race, Community and the American Political System 3 s.h.
34:260 American Social Politics 3 s.h.
34:270 Population and Society 3 s.h.
34:271 The Urban Scene 3 s.h.
34:272 The Urban Community 3 s.h.
113:3 Introduction to the Study of Culture and Society 3 s.h.
113:101 General Anthropology 3 s.h.
32:23-3 Religion in American History 3 s.h.
32:174 The Catholic Church in America 3 s.h.
32:176 The Genius of American Religious Institutions 3 s.h.
32:177 Puritanism in the Shaping of America 3 s.h.
Group C
Four semester courses in American literature

Group D
45:1 American Civilization (survey)
45:90 Senior Colloquium
Two of them:
45:150 Individual Rights in an Industrial Society
45:152 American Folk Literature
45:155 Significant Books in American Civilization
45:161 Human Rights and the Law in America
45:65-6 Afro-American History
45:135 American Civilization in the 20th and 30th
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 undergraduate programs can be formulated within the required groups.

The Master of Arts Program
On the master's level the program attempts 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;
- a study of a selected list of works important for an understanding of American civilization;
- an examination over both these areas above;
- a completion of two successful term papers which demonstrate 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 understanding of the literature, history, social sciences, fine arts and philosophy 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 committee 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 involving 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 department concerned, the student must select an acceptable body of work to be covered in this area of the comprehensive examination.

In addition, on the oral portion of the examination the candidate 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 than one 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 languages 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 examination.

Staff: professors Baender, Corrigan, Gerber, Kerr, Otter, Paul, Sayre, Whitaker, Morris, Davis, Turner (English); Dykstra, Gellroad, Hawley, James, Neal, Pernos, Roshenthal, Kerber (History); Alexander, Cutter, Seiberting (Art); Addis, Burdick, Bergmann (Philosophy); Davis, Johnson, Schmidhauser, Van Dyke (Political Science); Gonzales, Holm, Goldberg, McDough (Anthropology); Sanders (Sociology); Duffy (Education), Weiser, MacCarr (Speech and Drama); Hubhard, Meyers (Engineering); Kovansky (Business Administration); Verme (Law)

Courses Primarily for Undergraduates
461 American Civilization I 3 s.h.
462 American Civilization II 3 s.h.
4668 American Civilization Seminar 3 s.h.
4661 Contemporary Black Experience 3 s.h.
# Anthropology

**4586 Senior Colloquium**
Exploration of wild cultures of an era in historical perspective by applying the discipline of history, literature, art, philosophy and social science

**4587 Honors Colloquium**

**4588 Honors Project**

**4590 Project for Undergraduates**

**4592 Readings in American Civilization**

<table>
<thead>
<tr>
<th>Courses for Undergraduates and Graduates</th>
</tr>
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<tbody>
<tr>
<td>4510 Technology and Responsibility</td>
</tr>
<tr>
<td>Same as 3510 during 35130 and 35185</td>
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<tr>
<td>4511 Afro-American Literature</td>
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<td>Same as English 310</td>
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<td>4514 Afro-American Literature II</td>
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<td>Same as English 510</td>
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<tr>
<td>4515 18th Century Afro-American Fiction</td>
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<td>4516 Individual Rights in an Industrial Society</td>
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<td>4517 American Folk Literature</td>
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<tr>
<td>Same as English 512</td>
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<tr>
<td>4518 Significant Essays in American Civilization</td>
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<td>Same as English 515</td>
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<tr>
<td>4519 Human Rights and Law in America</td>
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<td>4519 Afro-American History (1619-1920)</td>
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<td>Same as History 1537</td>
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<td>4519 Afro-American History (1920-Present)</td>
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<td>Same as History 1578</td>
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<td>4517 Black Action Theater</td>
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<td>4518 Afro-American Drama</td>
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<td>4519 Introduction to American Civilization</td>
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<td>Materials and methods for graduate study</td>
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<tr>
<td>Same as English 514</td>
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<td>4519 The American Renaissance</td>
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<td>4519 American Civilization in the 1800s</td>
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<td>4519 American Civilization in the 20th and 21st</td>
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<td>4519 American Civilization Since 1920</td>
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<td>45197 Interpretations of American Civilization</td>
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<th>Courses Primarily for Graduates</th>
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<tr>
<td>45200 Barrow Papers in American Civilization</td>
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<td>45210 Culture of Black Americas: An Interdisciplinary Approach</td>
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<td>45211 Research in Afro-American Culture</td>
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<td>45212 Artforms in the New World</td>
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<td>Same as Anthropology 35212</td>
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<td>45215 Politics and the Black Worker</td>
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<td>45216 Human Rights and World Order</td>
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<td>Same as Political Science 33:261, Journalism 19:200, Religion 32:00, Law 9:200</td>
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<td>45216 American Civilization and Culture</td>
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<td>Same as English 515</td>
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## Anthropology

**Department Chairman:** Roland Buhle, Ph.D., B.A. (in anthropology and in 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 cultural norms for thought and feeling. In many ways, anthropology is the most interdisciplinary of disciplines.

An undergraduate major in anthropology provides a foundation for professional training not only of anthropologists but of doctors, nurses, lawyers, economists, political scientists, social workers, sociologists—whoever whose work will involve cultures 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 Cultures and Society and 113:61 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. Coursework is encouraged in such related areas as sociology, linguistics, geology, geography, psychology, zoology and statistics. The advisor may be consulted for specific recommendations.

E elective 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 activity in folk and tribal settings primitive art, biological anthropology and urban anthropology. In the under-graduate program, specialization is encouraged, and the program is aimed at giving the student the broadest possible cross-cultural background.

### Special Programs

**Honor**

**Doctor of Philosophy**

**Master's Program**

**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 anthropological 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 general 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 former 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, archaeological and linguistic. The second focuses on the student’s area of concentration, either social anthropology—ethnology or archaeology. Those who pass the qualifying examination 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 36 semester units, depending on previous anthropological training. The program will probably be completed after 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, archaeology, and linguistics or linguistic anthropology.

In combination with undergraduate work and 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 requirement.

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 anthropology or ethnology—social anthropology.

Total credit hours required are 72 for the graduate college. 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 at the end of coursework, 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 nonlinguistic 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 acquisition of two appropriate research tools from a list which includes foreign languages, statistics, symbolic logic, and computer programming; satisfactory 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 thesis advisor must be selected from 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, anyone who has had the equivalent of one introductory course in linguistics and anthropology (103:206 and 113:201) may not be required to meet the distribution requirements.

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 doctorate 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, facility approaching that of a native speaker in the first language, mathematics, logic, statistics, computer programming, geology, 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.
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 America, the Caribbean and Middle America, and Oceania (including Australia and New Zealand). Submissions for this requirement may be made for students specializing in archaeology, e.g., the archaeological record of a major culture area. Students will demonstrate original research in one of their anthropological research topics: culture and personality, kinship and social structure, social and cultural change, language and culture, religion, prehistory, 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 Archeological Collection. The University of Iowa was one of 20 universities which joined in 1949 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 cultures. There are duplicate HRA Files at each participating university. Continually expanding, they not only provide a comprehensive reference guide but are themselves a valuable resource of information. At Iowa, the HRA Files and other Main Library resources give anthropology students ready access to source material on more than 450 cultures.

The Faculty
Members of the Anthropology faculty have studied and lived in the Orient, the Near East, Africa, Latin America and among American Indians. On-going research in the department includes work on such problems as the development of technologies to analyze ceramics in the Upper Tepexicana Valley in Mexico, research on traditional culture and language of Tripolitanian Jews, computer simulation of population demography in a Taiwanese village, patterns of female and male child rearing among patrilocal societies in Liberia, the effects of a regional power installation on the Indians in the Black Mesa area, a comparative linguistic and ethnohistorical study among the Athapascan Indians of Alaska and Northwestern Canada, and interactions between social class and cultural politics in Latin America. Faculty members have continued their research work during the past two years in Mexico, Japan, Liberia, the Canadian Subarctic, Arctic and Israel.

Staff: Arthur Helen, Shuler: associate professor; Chaiton, Goldberg, McCutcheon; assistant professors Carter, Kocikowski, Marshall, McHugh

Courses: Anthropology

For Undergraduates Only
11b04 Introduction to the Study of Culture and Society 4 a.h.
The comparative study of culture and society organization; may be taken in partial fulfillment of social science requirement.
11b10 The World's Peoples: An Ethnographic Survey 4 a.h.
Anthropological study of various world economic systems and belief and warfare by which different peoples live; anthropological literature and ethnographic films on America, Africa, Eurasia and Oceania; may count in partial fulfillment of social science requirement.
11b11 Introduction to Archaeology and Physical Anthropology 4 a.h.
Origins and development of man from prehistoric times to present; emphasis on student participation; introduction to men's physical evolution and cultural history.
11b70 Individual Study 1 to 3 a.h.

11b80 Advanced Survey of Anthropology 2 a.h.
Selected topics: evolution, human culture, prehistory, paleoanthropology, early cultures, prehistory, paleoanthropology, early cultures. Pre- or post-humans; anthropology, cultural evolution, and the human race. Pre- or post-humans; anthropology, cultural evolution, and the human race.

11b90 Advanced Survey of Anthropology 2 a.h.
Selected topics: evolution, human culture, prehistory, paleoanthropology, early cultures, prehistory, paleoanthropology, early cultures. Pre- or post-humans; anthropology, cultural evolution, and the human race.
It pioneered the artist-teacher concept, soliciting its teachers 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—クリスウェルを含む—into 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 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 appears likely to persist. However, Iowa graduates continue to be placed in acceptable positions.

There is no "ornamental" 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 against the broad setting of a liberal education. The student earns one-half to two-thirds of his or her credit 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 encourage specialization. The art history major requires at least 30 semester hours of course work in the field, including an introduction to the major curriculum. The major curriculum is designed 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 guest critics.

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 video tape, 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 27 to 30 semester hours of studio work. Students must complete 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 may be used in an additional major or minor). The foreign language requirement is reduced to 12 to 18 semester hours.

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 8 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 major 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 colleges of Education and Liberal Arts. Students for this degree may have all the courses required of an art major taking a B.A. in studio or art history but 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.

Admission
All high school graduates qualifying for admission to the University are thereby eligible for admission to the School of Art and Art History. Students planning to major in studio cannot have a portfolio of their work reviewed and commented upon by a faculty committee, Students planning to major in art education or the history of art may arrange pre-registration conferences with an advisor in those areas by applying at the main office in the Art Building.

Graduate Programs
Almost all the students receiving graduate degrees in the School have taken advanced studio courses. Very few become full-time professional artists, but, 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 graduate

Art and Art History
Art and Art History

level in art offers 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 consultation with the student and his or her adviser. A course in the methodology of art history is required of all students, but the rest 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 potential by the art history faculty. Following his or her acceptance into the program, the student plans his or her continuing study with his or her adviser 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. programs, address the
Professor in 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 adviser, a clearance review is held at stated intervals at which 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 adviser, 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 adviser's approval, may be no more than an inventory record and photographs.

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 adviser, 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 adviser'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 adviser. 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 of 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 Honors Auditorium.

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

Other School of Art facilities include a smithing furnace for bronze casting, a well-equipped darkroom, kilns sufficient enough for fire-life-size ceramic sculptures, and a large shop for woodworking, metalworking and industrial design. There are also glass and metal melting furnaces and video equipment and advanced spray equipment for the application of plastic foam 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 materials resources include more than 140,000 slides used in art history classes, and students have access to an additional 70,000 photographs and study aids.

While not 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 theater.

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 faculty student participate in national and international exhibitions. The art education faculty are involved both in studio and scholarly evaluation of educational programs.

Staff: Professors Alexander, Barford, Quinter, Fracessini, Laskowsky, Lechac, Schutle, Selberling, Toussaint, Wilkie; Associate Professors Broder, Myers, O'Neill; Tucker, Wilson, visiting artists Schmidt, Tysack; Assistant Professors Begley, Choo, DePuma, Foster, Ito, Johnson, Munson, Riegger, Walker, Woodham; Intern: Mrs. D. Roseboom

Librarian: Art Library: Harlan Sifford
Curator, Visual Materials: Carolyn Milligan

* On leave, fall semester 1972
** On leave, spring semester, 1972-73
Botany
Department Chairperson: Robert L. Mullany
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 Iowans 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 horticulture with the New York Botanical Garden, 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 223:20 Elementary Functions
- 4:41-4 and 4:6 General Chemistry
- 4:121-2 and 4:141 Organic Chemistry

Twenty-four semester hours of botany to include:

2:1 Introduction to Botany
5 s.h.
2:10 Anatomy of Land Plants
2 s.h.
2:12 Algae and Fungi
3 s.h.
2:13 Biology of the Local Flora
3 s.h.
2:102 or 37:110 Genetics
3 or 4 s.h.

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


Students preparing to teach in secondary schools should consult the College of Education regarding requirements for teacher certification.

The Honors Program
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.
Botany

(2:124 hours in Botany) during the senior year, maintain the grade-point average required for admission to the program and pass all Honours examination at the end of the senior year.

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 compli-
ance with these requirements rests with the student. Students who have not had the verbal and quantitative parts of the Gradu-
ate 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 per-
form some service as teaching or research assistants.

If the enrolling student has little or no training in botany or
biology, some introductory coursework will be required in ac-
cordance 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.
 Cotrans 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,
bryology, cell biology, ecology, genetics, molecular biology, my-
ecology, palaeobotany, physiology, plant taxonomy, or 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 commit-
tee 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 pre-
pared 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 fulfill this requirement.
• Achieve a grade-point average of 3.0 on all courses—other
than Research—attained up to the time of the final exami-
nation.
• Take a written examination during the term in which he or
she is expected to graduate. This examination is given for the
senior examination. These examinations cover both courses or
research experiences the student has had up to this point.

The Master’s Degree in Biology for Science Teachers.

A student electing this degree must complete at least 30 semester
hours of graduate work, including the preparation of an accept-
able 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 10 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 profes-
sor and two other members of the graduate faculty, one of whom
may be from another department.

Normal procedure is for the program of study for the Ph.D. to be
prepared during the first semester in residence follow-

ing the award of a master’s degree. The guidance committee
prescribes 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 course-
work or specific problems in research (such as ability to read certain
languages or 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 field of concentration and
research. Preparation for comprehensive examinations affords an
opportunity for the student to review and establish continuity of
thought concerning the basic ideas and disciplines in his or her
professions.

At least 72 semester hours of graduate credit are required, includ-
ing courses taken for the master’s degree.

The doctoral thesis must be submitted before the final exam-
ination, which is primarily a defense of the ideas and the methods
of obtaining the data therein. The doctoral thesis should be an
original contribution to the general body of knowledge. In addi-
tion to its research contribution, it should contain a discussion
2117 Experimental Techniques 2 a.h.
Lecture and laboratory work with lab. sampling, colorimetry, spectrophotometry, chromatography and selected chemical analysis; prerequisite: consent of instructor; same as 1227.

2118 Experimental Techniques 2 a.h.
Consideration of 2117, but may be taken as an independent self-study, chemical analysis, enzyme studies and measurement of photosynthesis and respiration

2120 Paleobotany 4 a.h.
Major important groups of fossil plants; their structure, evolution, phylogenetic relationships and probable classification. Prerequisites: 2101 or equivalent and consent of instructor; same as 1227.

2121 Botany 4 a.h.
Naras, organs and role of pollen and spores. Field and laboratory study of pollen-bearing plants; application to invertebrates, broadleaf, gymnosperm and angiospermous groups. Prerequisites: course in geology, biology or botany; same as 1228.

2122 Biology of the Lunar Puppet 4 a.h.
Comparative study of the taxonomy, morphology, physiology and ecology of Phytophthora (lower fungi) and water molds; prerequisites: 21 or equivalent.

2124 Honors in Botany or arb.
Both seniors; prerequisites senior standing and grade-point average 3.0 or over, 3.3 in botany.

2129 Evolution 4 a.h.
Nature of evolutionary mechanisms, their genetic base and their expression in patterns of adaptation and distribution of plants and animals. lecture, discussion, reading, prerequisite: 315 or 21 or equivalent; same as 317.

2130 Ecology 4 a.h.
Ecology in relation to the balance between organisms and their physical environment, and the effect of environmental change on populations, communities and ecosystems. prerequisites: course in botany or zoology, general chemistry, or chemistry. same as 311.

2137 Medical Mycology 4 a.h.
Basic techniques used in study of fungi which are parasitic for man, animals and plants and on control of the parasites; same as Microbiology 410.

2141 Plant Pathology 4 a.h.
Recognition and identification of plants in the living condition; use of keys and manuals; principles of plant pathology or natural classification as evident under field conditions, lecture, laboratory and frequent field trips; offered only to the senior women.

2193 Special Topics or arb.
Readings, conferences, and written reports on phases of plant science of personal interest to students; plan in relation with various other fields of study.

2190 Genetics of Cell Organelles or arb.
Lecture and laboratory work on structural and molecular genetics of cell organelles with emphasis on genetics of organelles such as chloroplast and mitochondrial in higher plants. Prerequisites: 2101 or Ecology 312.

2191 Embryology and Biochemistry 3 a.h.
A study of the development of advanced animals and plants related fields: standard laboratory techniques for studying DNA, RNA and protein synthesis. Prerequisites: biology 21, 2101, and consent of instructor.

2192 Advanced Plant Physiology or arb.
Principles of plant cell structure and function and the principles of photosynthesis and respiration eight hours per week; offered in cooperation with 2320.

Course Primarily for Graduates 2-3 a.h.
Hybridization, involution, polymerization, cephalopody, cyclosynthesis, experimental biogenetics, intercalary amputation, operation and development, plant morphology and a variety of topics in plant morphology and genetics. Prerequisites: consent of instructor.

2204 Seminar: Genetics or arb.
Lecture and laboratory work on selected topics in genetics; a specific topics will be selected each year, course may be repeated for credits; prerequisites: 2103 or 2101 and 2115 or consent of instructor; same as Ecology 27123 and 26123.

2205 Seminar: Morphogenesis or arb.
Detailed study of current status of cell and tissue differentiation, developmental anatomy and experimental morphology of plants; prerequisites: 2101, 2114 or equivalent.

2208 Advanced Botany Laboratory 2-3 a.h.
Two-year cycle of lectures and laboratory work on classes of families as preparation for teaching and major: prerequisites: 1228 or consent of instructor.

2209 Advanced Plant Physiology or arb.
Lecture and laboratory study of plant biochemistry and orientation: prerequisites: 2101 or equivalent and one year of college chemistry or physics.

2211 Seminar: Ecology 2 a.h.
Professional seminar with lectures, discussions and literature reviews on selected topics in ecology; offered in alternate years; may be repeated for credit.

2213 Seminar: Laboratory for advanced graduate students with definite plan to use techniques of electron microscopy: in three theoretical and experimental aspects of tissue preparation, thin sectioning, histochemistry, autoradiography, radioactive tracer methods and visualization of plant material. prerequisites: 2114 and consent of instructor.

2317 Presentation: Mycology 2-4 a.h.
Readings and discussion of literature; prerequisite: consent of instructor.

2319 Presentation: Plant Physiology 2-4 a.h.
Readings and discussion of current American and foreign research literature: monographs and professional texts; prerequisites: 21 and 310 and consent of instructor.

2321 Seminar: Botany 0 or 1 a.h.
Selected topics of interest for one hour of credit for better major graduates; open to senior majors in botany and graduate students in other departments.

2322 Research Seminar arb.

2335 Thesis Botany or arb.

Chemistry

Department Chairman: Friar, William R. Rule Degrees offered: B.S., B.A., M.A., Ph.D.

Chemistry is a basic science involving the study of substances and the changes they may undergo. Whoever 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 or working on 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, nutrition, zoology, pharmacy, pharmacology, physiology, medicine, medicinal chemistry, metallurgy, geology, oceanography, geochemistry and chemical engineering.

The undergraduate program in chemistry at Iowa is intended to provide a balanced program. Students are prepared for careers in chemistry, and are given a basic science education for related fields such as biology, botany, microbiology, pharmacy, medicinal 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 adviser 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**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>411* or 412*</td>
<td>Principles of Chemistry</td>
</tr>
<tr>
<td>411, 412</td>
<td>Elementary Chemistry Laboratory</td>
</tr>
<tr>
<td>413</td>
<td>Organic Chemistry</td>
</tr>
<tr>
<td>414, 415, 416</td>
<td>Analytical Chemistry</td>
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<td>417</td>
<td>Physical Chemistry</td>
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<tr>
<td>418, 419, 420</td>
<td>Intermediate Chemistry Laboratory</td>
</tr>
<tr>
<td>421, 422</td>
<td>Advanced Chemistry Laboratory</td>
</tr>
<tr>
<td>423</td>
<td>Advanced Inorganic Chemistry</td>
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<tr>
<td>424</td>
<td>Advanced Organic Chemistry</td>
</tr>
<tr>
<td>425</td>
<td>Introductory to Senior Research</td>
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<tr>
<td>426</td>
<td>Senior Research</td>
</tr>
<tr>
<td>427</td>
<td>Chemistry Orientation</td>
</tr>
</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, or 2 semester of German and two semesters of other 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, microbiology, 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 elected. 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>Physical Chemistry</td>
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<tr>
<td>418, 419, 420</td>
<td>Intermediate Chemistry Laboratory</td>
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<tr>
<td>421, 422</td>
<td>Advanced Chemistry Laboratory</td>
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<tr>
<td>423</td>
<td>Advanced Organic Chemistry</td>
</tr>
<tr>
<td>424</td>
<td>Introductory to Senior Research</td>
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<tr>
<td>425</td>
<td>Senior Research</td>
</tr>
<tr>
<td>426</td>
<td>Chemistry Orientation</td>
</tr>
</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:

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</thead>
<tbody>
<tr>
<td>411* or 412*</td>
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</tr>
<tr>
<td>418, 419, 420</td>
<td>Intermediate Chemistry Laboratory</td>
</tr>
</tbody>
</table>

* 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 be admitted in chemical physics. The requirements for admission prescribed by the Graduate College must also be fulfilled.

Program
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.

4170 Advanced Inorganic Chemistry
4171 Advanced Analytical Chemistry
4172 Advanced Organic Chemistry
4173 Advanced Physical Chemistry

Entering students will be given the opportunity to take examination in two of the above courses to demonstrate competence in the areas. These examinations will be administered at the opening 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 study takes for the master's degree constitute part of 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 area.

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 requisite to admission for the master's degree 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 requisite to 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 published portion of the thesis (written in the correct style for a chemistry journal) must be defended satisfactorily before an examination committee. The Ph.D. examining committee, composed of five members of the graduate faculty, is the final authority in recommending conferment of the Ph.D.

Languages
The Department of Chemistry does not require a proficiency in foreign languages as 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.

Ph.D. in Applied Mathematics
The Department of Chemistry cooperates in interdisciplinary
doctoral programs in Applied Mathematical Sciences. See "Divi- sion of Mathematical Sciences."

Facilities
The Department of Chemistry is housed in a five-story building and a new (1962) five-floor annex and auditorium addition. The building contains 22 undergraduate laboratories, 48 graduate research laboratories, six showrooms, 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 subscribes to 200 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.


Courses Primarily for Undergraduates

41 Chemistry I
3 or 4 a.h.
For beginning students who plan to take more than two semesters of chemistry; two lectures and one discussion weekly; engineering students register for three semester hours, which includes one laboratory period each week.

42 Chemistry II
3 or 4 a.h.
Continuation of 41; two lectures and one discussion weekly; prerequisite: 41 or 43.

43 Principles of Chemistry
3 a.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 integrated credit will be awarded at the minimum of three semester hours of advanced college placement credit from high school; minimum of 30 on high school chemistry examination for placement in course.

45 Chemistry Laboratory
3 a.h.
One lecture and one laboratory weekly; prerequisite: 43; prerequisite: 43 of 44 or 45.7

47 General Chemistry I
3 a.h.
For beginning students who plan to take one or two semesters of chemistry; three lectures and one episodic discussion weekly.

48 General Chemistry II
3 a.h.
One laboratory for students who plan to take more than two semesters of chemistry; three lectures and one episodic discussion weekly; prerequisite: 34 of 44 or 45.

49 Elementary Organic Chemistry Laboratory
2 a.h.
One lecture and one laboratory weekly; prerequisite: 52 or prerequisite: 52 of 53.

411 Elementary Quantitative Analysis
4 a.h.
Prerequisites: 44 and lecture and two laboratory periods weekly; prerequisite: 44.

420 Chemistry I: Quantitative Analysis
4 a.h.
Chemistry curriculum; methods of study; chemical probes; fields of chemical specialization; present and future developments; required for all majors in chemistry each semester; one meeting per week as arranged; no prerequisite.

421 Development of Ideas in Chemistry
4 a.h.
Development of ideas from ancient and modern chemistry; traced logically, chronologically and from a historical point of view; science elective for non-chemistry majors and one laboratory weekly.

432 Chemistry in Our Lives
3 a.h.
Contemporary issues involving chemistry, particularly those in which chemical developments have been made to improve living conditions.

450 Inorganic Syntheses
2 or 3 a.h.
Presentation of a variety of inorganic compounds; two laboratory periods weekly.

456 Introductory Organic Chemistry
3 a.h.
A one-semester course in organic chemistry with emphasis on biomolecules; required for all high school biology, chemistry; three laboratory weekly.

461 Analytical Chemistry
3 a.h.
Analytical chemistry for students with an emphasis on instrumental methods of analysis; three lectures weekly; for B.S. and B.A. majors in chemistry; prerequisite: 43 or 45.

471 Analytical Chemistry Laboratory
3 a.h.
Continuation of 411, which is prerequisite.

474 Instrumental Methods of Analysis
3 a.h.
Principles, laboratory, spectrophotometric, electrophoretic and colorimetric methods of analysis; two lectures and two or three laboratory periods; prerequisite: 411.

472 Organic Chemistry I
3 a.h.
General principles illustrated by preparation and study of typical representatives of aliphatic and aromatic series; three lectures weekly; prerequisite: 44 and 4, 45.

473 Organic Chemistry II
3 a.h.
Continuation of 411, which is prerequisite.

475 Introduction to Organic Research
3 or 5 a.h.
Synthesis and purification of organic compounds; methods and techniques of experi- ences determinate; two conferences and three to five laboratory periods weekly; prerequisites: 412 and 414.

476 Qualitative Organic Analysis
3 or 4 a.h.
Identification of pure organic compounds and mixtures; two lectures and two laboratory periods weekly; prerequisite: 412, 413, 414.

477 Introduction to Polymer Chemistry
3 a.h.
Modern techniques of synthesis, structure, physical properties and preparative methods; three laboratory periods weekly; prerequisite: 411, 413, 415.

478 Advanced Physical Chemistry I
3 a.h.
Elements of theoretical chemistry, electronic for promoted students and senior science majors; three lectures weekly; prerequisite: 412.

479 Physical Chemistry I
3 a.h.
Application of laws of physics to chemical phenomena, three lectures weekly; prerequisite: Physics 210B, Mathematics 224/7 or MATH 227.

482 Physical Chemistry II
3 a.h.
Continuation of 411, which is prerequisite.

483 Introduction to Symmetry in Quantum Chemistry
2 a.h.
Elementary symmetry arguments applied to quantum chemistry problems; prerequisite: 412.

484 Intermediate Chemistry Laboratory I
3 a.h.
Preparation, purification, identification and analysis of chemical compounds, prin- cipally organic compounds; one lecture and two laboratory periods weekly; prerequisite: 411.

415 Intermediate Chemistry Laboratory II
9 a.h.
Continuation of 414, which is prerequisite; one lecture and two laboratory periods weekly.

413 Advanced Chemistry Laboratory I
2 or 3 a.h.
Physical analysis: infrared, nuclear spectra, three lectures and two laboratory periods weekly; prerequisite: 411 and 413.

414 Advanced Chemistry Laboratory II
8 or 10 a.h.
Continuation of 413, which is prerequisite; one lecture and two laboratory periods weekly.

415 Introduction to Senior Research
1 a.h.
Information written in chemical, biological and physical sciences; presentation and anal- ysis of chemical research problems; one meeting weekly; may be repeated once for credit; prerequisite: senior standing in chemistry.

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

476 Advanced Inorganic Chemistry
3 a.h.
Advanced topics in inorganic chemistry; three lectures weekly; prerequisite: 412.

477 Advanced Analytical Chemistry
3 a.h.
Disciplines of research in the area of modern analytical techniques; three laboratory periods; prerequisite: 412, 413, 414.

478 Advanced Organic Chemistry
3 a.h.
General organic chemistry for advanced students; three laboratory periods; prerequisite: 412, 413, 414.

479 Advanced Physical Chemistry
3 a.h.
Physical chemistry for advanced students; three lectures weekly; prerequisite: 412, 413, 414.

480 Chemistry Pedagogy
3 a.h.
Techniques and practice of teaching chemical principles and principles of self
<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Seminars in Chemistry</strong></td>
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<tr>
<td>4851 Seminar: Analytical Chemistry</td>
<td>0 or 1 h.</td>
<td></td>
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<tr>
<td>4853 Seminar: Inorganic Chemistry</td>
<td>0 or 1 h.</td>
<td></td>
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<tr>
<td>4856 Seminar: Organic Chemistry</td>
<td>0 or 1 h.</td>
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<tr>
<td>4858 Seminar: Physical Chemistry</td>
<td>0 or 1 h.</td>
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<tr>
<td><strong>Research in Chemistry</strong></td>
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<tr>
<td>4891 Research: Analytical Chemistry</td>
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<tr>
<td>4893 Research: Inorganic Chemistry</td>
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<tr>
<td>4896 Research: Organic Chemistry</td>
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<tr>
<td>4898 Research: Physical Chemistry</td>
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<tr>
<td><strong>Child Behavior and Development</strong></td>
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<tr>
<td>Institute of Child Behavior and Development</td>
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<tr>
<td>Acting Director: Howard V. Meredith</td>
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<tr>
<td>Degrees offered: B.A., M.A., Ph.D.</td>
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<tr>
<td><em>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.</em></td>
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<tr>
<td><strong>Undergraduate Major</strong></td>
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<tr>
<td>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. Major in the B.A. program gain experience in working with children in research settings and may elect practicum participation 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:</td>
<td></td>
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<tr>
<td>*Prerequisites: 3111 Elementary Psychology 3 h.</td>
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<tr>
<td>22M30 Elementary Functions (or equivalent)</td>
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<td></td>
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<tr>
<td>and any two of the following:</td>
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<tr>
<td>291 College Physics</td>
<td>4 h.</td>
<td></td>
</tr>
<tr>
<td>292 College Physics</td>
<td>4 h.</td>
<td></td>
</tr>
<tr>
<td>4/7 General Chemistry I</td>
<td>3 h.</td>
<td></td>
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<tr>
<td>4/8 General Chemistry II</td>
<td>3 h.</td>
<td></td>
</tr>
<tr>
<td>37/3 Principles of Human Genes</td>
<td>5 h.</td>
<td></td>
</tr>
<tr>
<td>37/101 Principles of Human Genetics</td>
<td>3 h.</td>
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</tr>
<tr>
<td>*Required courses: 591 Introduction to Child Psychology 3 h.</td>
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</tbody>
</table>
Graduate Majors

M.A. in Preschool Education

This M.A. program, which normally takes two years to complete, provides information regarding child development, 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 may elect a variety of courses 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>
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</tr>
</thead>
<tbody>
<tr>
<td>5:201</td>
<td>Introduction to Child Psychology (register for 5:199)</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>Laboratory in Child Psychology</td>
<td></td>
<td></td>
</tr>
<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>5:230</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></td>
</tr>
<tr>
<td>5:234</td>
<td>Advanced Practicum in Preschool Education</td>
<td>1-4 s.h.</td>
</tr>
<tr>
<td>5:301</td>
<td>Research in Child Development</td>
<td>5-7 s.h.</td>
</tr>
<tr>
<td>7:2-17</td>
<td>Method: 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>

Recommended 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 in undergraduate 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>0 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>5 s.h.</td>
</tr>
<tr>
<td>31:140</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>31:237</td>
<td>History and Systems of Psychology</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31:335</td>
<td>Laboratory Techniques</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>22C:100</td>
<td>Introduction to Computer Programming and Forarts</td>
<td>2 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>5:240</td>
<td>Social Behavior of Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:255</td>
<td>Perceptual Processes in 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>5:242</td>
<td>Visual Psychophysics of Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:243</td>
<td>Verbal Processes in Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:244</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.

Recommetion 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:
5201 Methodological Problems in Child Development 3 s.h.
5215 Seminar: Child Development Research 0 s.h.
5240 Learning in Children 3 s.h.
5241 Motivational Determinants of Child Behavior 3 s.h.
225:148 Advanced Statistics: Methods 4 s.h.
225:159 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.
225:157 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 Vocal Processes in Children 3 s.h.

One of the following:
5244 Methodological 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.

Recommetion 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 chairmen of admissions, Institute of Child Behavior and Development, The University of Iowa, Iowa City 52240. The applicant must submit formal application 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 admissions and other types of student support by writing the chairmen 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 stop facilities, and laboratories for research with infants and children. The University Pre-school 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 pre-school-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 and equipped with complete sets of 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
devices are available for use in the various laboratory rooms in both East Hall and the Preschool Laboratories.

**Faculty Strength**

By training and inclination, the faculty are characterized by a dual dedication to teaching and research. Scholarship of the faculty is manifest in the caliber of classroom teaching, the quality of guidance given individual students at the undergraduate and graduate levels, and the strength of faculty and student research publications appearing in leading professional journals and monograph series. Faculty diversity is shown by the number of specializations in child development that different individuals represent: infant behavior, visual and auditory psychophysics, memory processes and mechanisms, motivation and attitude development, discrimination learning, transfer of training, concept formation, child psychophysiology, social development, early childhood education. The teaching competence of the faculty is strongly attested by the I.M.A. and Ph.D. graduates who are providing leadership at various institutions across the country, in Canada and elsewhere.

**Staff**

Profs. Cantor, M. Spiker, Asst. associate Prof. Alden, Cassier, Biddle, Pantel; Assistant Prof. Berg, Croll, Reiner, Stilman; Research associate Keesick, teaching associates Cary, Crowder

**Courses for Undergraduate Students Only**

**5101 Introduction to Child Psychology** 3 s.h.

Research and theory in child psychology, with emphasis on basic principles of learning and motivation, prerequisite Psychology 211 or equivalents; same as Psychology 211:40. Students electing optional laboratory should register for 5102.

**5102 Laboratory in Child Psychology** 1 s.h.

Demonstration of laboratory research and participation in class experiment with preschool-aged children, same as Psychology 211:10; should be taken concurrently with and following 5101.

**5110 Developmental Psychology of Children** 6 s.h.

Development of interpersonal behavior in children with emphasis on application of learning principles to acquisition and maintenance of social behavior patterns; prerequisite: Psychology 211:1 or equivalent.

**5112 Language Development in Children** 3 s.h.

Basic data, theoretical analysis and current controversy concerning nature of language development; prerequisite Psychology 211:1 or equivalent.

**5113 Observation and Participation in the Preschools** 3 to 6 s.h.

The University Preschool as laboratory for training in and applying an influence on children. Ten 90-minute sessions in observation and supervised participation in Preschool Laboratories required; prerequisites Psychology 311:2 and Education 701:60 or 5112 (same as Psychology 211:8) and consent of instructor.

**Courses for Graduate and Undergraduate Students**

**5100 Child Development** 5 s.h.

Methods in psychological study of infants and children; developmental norms, motor and perceptual maturation; sensory-motor development; perceptual, learning and motivational processes; cognitive development; personality development; methodological and statistical bases of child development research. Open to students who are major or other than child development. Includes supervised participation in class experiment.

**5201 Basic Principles and Theory in Children's Learning** 3 s.h.

Introduction to experimental psychology; functional analysis of behavior, learning and motivation, conditioning, discriminative learning, concept formation, memory, perceptual processes in children; prerequisite Psychology 311:1 or equivalent.

**5204 Sensation and Perception in Children** 3 s.h.

Research procedures and results bearing on sensory and perceptual processes in children; prerequisites Psychology 311:1 or equivalent.

**5106 Readings in Child Psychology** 3 s.h.

Graduate students for whom 5101:525 and/or 5106 would be appropriate may need for up to three semester hours of credit for 5101:525 and/or 5106 by registering for this course; prerequisite consent of instructor.

**5210 Methodological Problems in Child Development** 3 s.h.

Analysis and discussion of specific methodological considerations in applications to child psychology: laboratory exercises in analyzing studies in child psychology.

**5211 Selected Problems in Child Development** 3 s.h.

Analysis and critical evaluation of prepared and completed research projects in child psychology.

**5212 Perceptual Processes of Children** 3 s.h.

Analysis of research on perceptual development; topics include basic sensory development, attention, discrimination, and perceptual constancies; prerequisites: 5110 and 5112 or equivalents and consent of instructor.

**5213 Preschool Education** 3 s.h.

Principles and procedures, with emphasis on unique aspects of University Pre-school Laboratories.

**5241 Seminar: Curriculum Development in the Preschool** 3 s.h.

Principles of curriculum development; improvement throughout preschool years; prerequisites: 5112 or equivalent.

**5244 Advanced Prerequisites in Preschool Education** 1 to 6 s.h.

Observation and participation in Preschool Laboratories; prerequisite: permission of instructor.

**5310 Psychophysiology of Children** 1 s.h.

Psychophysiological aspects of neglect and development of psychophysiology; results and concepts from studies relating psychological and electrophysiological variables with emphasis on experimental work with infants and children; prerequisite consent of instructor.

**5341 Learning in Children** 3 s.h.

Review and analysis of research on development of learning processes, emphasis on classical and instrumental conditioning, generalization, discrimination learning, verbal learning, memory; same as Psychology 311:4.

**5341 Motor Control in Children** 3 s.h.

Motor control in infant and young child behavior; prerequisite consent of instructor.

**5342 Motor Learning in Children** 3 s.h.

Motor learning and motor learning in infants and young children; prerequisite consent of instructor.

**5342 Visual Psychophysics in Children** 3 s.h.

Analysis and interpretation of recent research at study of visual psychophysical processes in children; prerequisite Psychology 311:2.

**5344 Verbal Processes of Children** 3 s.h.

Verbal communication with children with specific differential effects on children and adaptive development of short- and long-term memory; prerequisite consent of instructor.

**5344 Mathematical Models of Child Behavior** 3 s.h.

Application of dynamic models to developmental processes in generalization, discrimination, and simple and complex reactive behavior; prerequisite ability to read and understand mathematics; prerequisite consent of instructor.

**5346 Psychophysical Processes in Children** 3 s.h.

Physical and behavioral processes in children; prerequisite consent of instructor.

**5348 Advanced Psychophysiology of Children** 3 s.h.

Psychophysiological aspects of child development with special emphasis on changes in attention, memory; prerequisite: 5113 or consent of instructor.

**5348 Advanced Physiology in Children** 3 s.h.

Advanced psychophysiological aspects of child development with special emphasis on changes in attention, memory; prerequisite consent of instructor.

**5348 Perceptual Processes of Children** 3 s.h.

Psychophysiological aspects of changes in attention, memory; prerequisite consent of instructor.

**5348 Developmental Learning in Children** 3 s.h.

Theory and research on acquisition by children of differential responding in classical conditioning, and instrumental conditioning and its generalization, association of verbal and non-verbal stimuli; prerequisite Psychology 311:2.

**5348 Developmental Psychology of Children** 3 s.h.

Detailed review and discussion of selected topics in developmental psychophysiology; prerequisite consent of instructor.

**5348 Seminar: Selected Problems in Child Learning** 2 s.h.

Theory and research concerned with verbal and perceptual processes in transfer of training; includes such topics as learning set, stimulus priming, mediated generalization, verbal mediated transfer; prerequisite consent of instructor.

**5348 Seminar: Selected Problems in Child Learning** 3 s.h.

Theory and research concerned with verbal and perceptual processes in transfer of training; includes such topics as learning set, stimulus priming, mediated generalization, verbal mediated transfer; prerequisite 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, literatures and cultures of the area surrounding the Mediterranean basin from approximately 2000 B.C. to 454 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 contribution of the ancient world to life in the present. The student's work in 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 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. The following or their equivalents are the normal elementary courses and count toward the 24 semester hour minimum:

14-001 and 14-002 Elementary Greek
14-011 and 14-012 Second-Year Greek

14-171 Elementary Greek Composition

The remaining hours are usually filled by third-year Greek, "Homer and Hesiod," and fourth-year Greek, "Greco and Persia," and "Fifth Century Athens." A student majoring in Greek would graduate knowing not only how to read the Greek language, but also knowing some 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., when 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 20-015, and which include 20-171 Elementary Latin Composition or its equivalent. For most undergraduates, the concentration will be on the era of the last century of the republic and the first century of the Roman empire, roughly the period from 133 B.C. to 44 A.D. when Rome established its hegemony over the Mediterranean basin and laid the foundations for the 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 language are the same as those indicated for Greek or Latin. For the minor language 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 11-001. (For the general requirements of the College of Liberal Arts, see "College of Liberal Arts." For the requirements of the Iowa Teacher's Certificate, 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 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 161-180 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: Introduction 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 on 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:

- Ancient 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 discipline.

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 frescoes in bronze from Mycenae, Pompell and Herculaneum.

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 monastic sites 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, Morrey; professor emeritus Nybakken; associate professors Alexander, Hollmark; assistant professors Bush, Flickinger, Gardner, Jackson

Greek

Courses for Undergraduates Only

Students wishing to satisfy the B.A. foreign language requirement by studying Greek should take the following sequence of courses: 14-1, 2, 11, 12.

14-1 Elementary Greek 4 s.h.

Fundamentals of Active Greek and basic concepts of Greek civilization; five meetings 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 3 s.h.

Rapid reading of selections from the Gospels, may be taken with or after 14-2.

14-11 Seventh-Year Greek 3 s.h.

Reading of selected texts of Greek prose and poetry; prerequisites: 14-3 or equivalent.

14-11 Second-Year Greek 3 s.h.

Continuation of 14-11, which is prerequisite.

Courses for Undergraduates and Graduates

14-121 Homer and Hesiod 3 s.h.

For third-year Greek students. Selections from Homer's Iliad and Odyssey and from Hesiod's Works and Days presented in Greek; complete works read in English.

14-122 Homer and Hesiod II 3 s.h.

Continuation of 14-121, which is prerequisite.

14-1614 Persius and Propertius 3 s.h.

For students in fourth year of Greek; covers leading to Persicus and Persicar and Persius and Propertius.

14-1627 Greek Prosody 3 s.h.

Examination of the various meters in Greek and their application to Latin verse.

14-171 Greek Elementary Composition 3 s.h.

Instruction in the composition of short passages in Greek.

14-172 Advanced Greek Composition 3 s.h.

Prerequisites: Writing Latin and Greek prose with style of Lucretius and De Rhetoricos as models.

14-199 Historical Greek Historical Texts 3 s.h.

Texts in Greek for Hellenic History.

14-191, 14-192 Honors Reading 3 s.h.

Supervised reading with special advisor or topic leading to several short essays in first semester, a long paper in second semester; both courses required for Honors eligibility.

14-126 Private Tutorial 1 to 3 s.h.

For classics majors who have completed four years of Greek or equivalent.

14-189 Private Assignments 1 to 9 s.h.

Enrollment is by individual study. For advanced students who are not majors in the Department; may be repeated.

Courses for Graduates

14-205 Proseminar: Introduction to Advanced Study 3 s.h.

Advanced methods and discipline bibliography, textual criticism, paleography, history of classical scholarship; required of all graduate students.

14-203 Advanced Reading 1 to 9 s.h.

Open only to graduate students in the Department.

14-289 Indo-European Philosophy 3 s.h.

Examination of comparative method and applied specifically to Greek and Latin; study of phonological and morphological laws, some 20-203
Comparative Literature

Program Chairman: Alan F. Nagel
Department of Classics, 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 35 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, when he or she has met 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 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., in a classical language and literature. They may, however, choose a special literary seminar 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

Classics in English (No knowledge of Greek or Latin required)

Courses for undergraduates and graduates

1406: Introduction to Ancient Art

1407: Greek and Roman Civilization

1408: Greek and Roman Civilization

1410: Greek Art and Archaeology

1411: Greek Art and Archaeology

1412: Classical Mythology

1414: Greek vase Painting

1415: Ancient and Medieval Greek and Latin

1416: Roman Art and Architecture

1417: Roman Art and Architecture

1418: Roman Art and Architecture

1419: Roman Art and Architecture

1420: Roman Art and Architecture

Comparative Literature

Program Chairman: Alan F. Nagel
Department of Classics, M.A., Ph.D.

The purpose of the Comparative Literature Program is to present literature as an interdisciplinary and international study and
may elect to study a segment of literary history, an aspect of Classical literature, a Medieval literature, a genre (e.g., novel), or a specific literary critic or thinker. 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 examination (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 comparative 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 scholarship or criticism and his or her proficiency in the designated foreign language. A dissertation should be a substantial scholarly work showing a high degree of originality and creativity, and not merely a collection of critical essays. The dissertation may be written in the candidate's native language and must be translated into English for the dissertation committee. The dissertation is to be submitted in English.

Examinations

By the end of his or her first year of graduate study, 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 examination (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 comparative 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.

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 taught in the original. In addition, the seminars and seminars listed below offer students in seven courses.

Upper Division

48:103 European Renaissance 3 s.h.

48:105 European Literature of the 18th Century 3 s.h.

48:106 European Literature of the 19th Century 3 s.h.

48:107 Russian and Slavic Studies 3 s.h.

48:111 Theory and Techniques of Oral Literature 3 s.h.

48:113 Literary Genres in European Literature 3 s.h.

48:199 Individual Study 1-6 s.h.

Primary for Graduate Students

48:204 French and German Literature 3 s.h.

48:205 English and Russian Literature 3 s.h.

48:206 German and Modern Literature 3 s.h.

48:207 Major Traditions of Modern European Poetry 3 s.h.

48:211 History of Literature in European Languages 3 s.h.

48:212 History of Literature in English 3 s.h.

48:213 History of Literature in French 3 s.h.

48:214 History of Literature in Italian 3 s.h.

48:215 History of Literature in Spanish 3 s.h.

48:216 History of Literature in German 3 s.h.

48:217 History of Literature in Russian 3 s.h.

48:218 History of Literature in Polish 3 s.h.

48:219 History of Literature in Czech 3 s.h.

48:220 History of Literature in Hungarian 3 s.h.

48:221 History of Literature in Scandinavian 3 s.h.

48:222 History of Literature in Dutch 3 s.h.

48:223 History of Literature in Greek 3 s.h.

48:224 History of Literature in Latin 3 s.h.
Critical Theory: Plato to the Romantics 3 s.h.
Theory of language: emphasis on philosophical implications of theory arrived at in clinical psychiatry, Renaissance and Neoclassical Europe up to the age of Romanticism.

Comparative Seminars
 Fluent reading knowledge of at least one foreign language is prerequisite for 48230.

48230 Comparative Approaches
 cr. art. Setting for testing and evaluation of methods available to literary analysis; may form part of a sequence; see 48310 below.

48231 Comparative Approaches II
 cr. art. 

48232 Seminar: Literature in English
 cr. art. 

48234 Seminar: Special Topics in Medieval and Renaissance Literature
 cr. art. 

Computer Science
 See "Mathematical Sciences" 

Dental Hygiene
 Department Chairman: Paulene Bries Degrees offered: B.S., M.S.

Undergraduate Program
 The dental hygiene program is knowledge of the basic, social, dental and clinical sciences in contributing to the attainment of oral health for all people. Qualified by education and licensure, the dental hygienist provides patient treatment as prescribed by the dentist. These services include removal of stains and deposits from the teeth, application of agents which make teeth resistant to decay, preservation of clinical and laboratory tests for interpretation by the dentist, and individual and community educational activities for prevention and control of dental disease. The dental hygienist may pursue personal interests through employment in dental office practice, elementary and secondary schools, hospitals and schools for the handicapped, community, state and federal service, industry, dental hygiene education, dental research and foreign service.

Unlike traditional programs, the Iowa curriculum is designed to integrate related subjects to provide sequential lecture, laboratory and clinical experiences. For example, content traditionally presented as separate courses in oral prophylaxis technique, head and neck and dental anatomy, and dental materials are combined into a related junior core of learning. Additional coursework taken during the junior year are therapeutics, microbiology, radiology and periodontology.

During one semester of 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 communications 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 radiography, 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 at least a 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 and wish to pursue a bachelor's degree must therefore select a related field as the upper division area of study.

Students may begin the professional program in dental hygiene in the fall only. Students enrolled in The University of Iowa College of Liberal Arts need submit only the dental hygiene application. Transfer students must submit both College of Liberal Arts and Dental Hygiene applications. Generally, transfer students are interviewed by the Dental Hygiene admissions committee after submitting their application.

**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 increases in number of dental hygiene programs, opportunities for qualified dental hygiene educators are increasing.

Although a majority of the students who complete the master's degree program at Iowa enter the teaching or administrative areas 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 roles and responsibilities of graduate institutional 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 of 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, health insurance, 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, Sisly, Williams; instructors Burns, Measch, Schwindt, Taylor

**Courses for Undergraduates**

**88101 Dental Hygiene Core I**

- Team-teaching approach used to integrate basic dental hygiene theory and clinical skills into didactic and practical experiences related to complete oral prophylaxis, emergency procedures, oral hygiene instruction, oral health education and prevention, and the preparation of students for entering dental hygiene practice in all clinical areas.

**88102 Dental Hygiene**

- Lactation, nutrition, sedation, and clinical experiences related to theory and practice of dental hygiene. Approximately 30 hours per week spent in clinical setting; students advance clinical skills in oral prophylaxis, subgingival curetage, polishing alloy restorations, dietary counseling and oral health care instruction, lecture and discussions on ethics and practice management, including dental hygiene licensure, ethics and jurisprudence, office procedures, and instrument control and scientific readings in each clinical related topic as one physiological devices, dietary counseling for plaque control and clinical additional procedures consistent with clinical experiences.

**88201 8 or 16 hour**

- Didactic presentations, readings, discussions and field experiences related to theory and practice of community dental health. Lectures are devoted to learning principles of communicative teaching, science and utilization of educational media and operation of individual programs; public health structures, organization, funding, demography and dental epidemiology; and community field experiences; patients with physical and psychological handicaps provide opportunity to develop special techniques for teaching preventive measures and providing clinical services; scheduled weekly group discussion centers pertinent scientific literature, diabetes

**88111-11 Independent Study**

- Designed for students who wish to pursue additional study or to explore career interest in dental hygiene education, research or public health.
East Asian Languages and Literature

Course for Graduates

59:201 Directed Teaching Experience or arr.
Application of learning theories in teaching of dental hygiene; students share responsibility with faculty in preparation of educational objectives, didn’t materials and test items for a selected course. 3 s.h.

59:202 Directed Teaching Experience or arr.
Consultation with faculty sought to select a course area different from their first semester of teaching experience

59:205 Essays: Dental Hygiene 3 s.h.
Application of research methodology through development of an oral research project

59:206 Practicum 1 2 s.h.
Instruction of changing concepts in dental and dental hygiene education; discussions include comparison of growth and diversity of programs in dental hygiene schools in relation to current trends, types of programs and institutional affiliations, and student selects criteria

59:208 Practicum 2 2 s.h.
Curriculum design applied to organization, development and evaluation of curricula in dental hygiene education in addition to elements of curriculum development criteria, content includes identification of physical facility, faculty and administrative, operational costs and sources of funding 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.

Undergraduate majors are expected to complete a program of at least 24 semester hours in Chinese or Japanese language, 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:

- Language 30 s.h.
  - 39:01 Elementary Chinese 6 s.h.
  - 39:102 Elementary Chinese 6 s.h.
  - 39:103 Second-Year Chinese 6 s.h.
  - 39:104 Second-Year Chinese 6 s.h.

- 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.
- Literature 9 s.h.
- 39:141 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.
- Civilization 6 s.h.
- 39:055 Asian Civilization: China 3 s.h.
- 39:159 History of the Chinese Language 3 s.h.
- 39:156 History of China to 1560 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:

- Language 30 s.h.
  - 39:103 Elementary Japanese 6 s.h.
  - 39:102 Second-Year Japanese 6 s.h.
  - 39:104 Second-Year Japanese 6 s.h.

- Besides the above courses, two courses from the following are required:
  - 39:109 Advanced Readings in Modern Japanese 3 s.h.
  - 39:113 Japanese Speech 3 s.h.
  - 39:115 Japanese Composition 3 s.h.
  - Literature 9 s.h.
  - 39:143 Survey of Classical Japanese Fiction 3 s.h.
  - 39:150 Japanese Literature and the West 3 s.h.
  - 39:123 Japanese Dramatic Literature 3 s.h.
  - 39:125 One course of Classical Chinese Literature (Electives) 3 s.h.
  - 39:006 Asian Civilization: Japan 3 s.h.
  - 39:114 Study of the Written Character 3 s.h.

Selections for the Bachelor of Arts degree in East Asian Languages and Literatures are available in Chinese and Japanese.

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East Asian Languages and Literature

392:138 The Structure of Japanese
3 s.h.
392:153 History of Japan to 1867 A.D.
3 s.h.
392:154 History of Modern Japan
3 s.h.
392:155 Etymology of Japanese
3 s.h.
392:156 Art and Architecture of Japan
3 s.h.
392:158 Japanese Thought
3 s.h.
392:161 Religion in Japan
3 s.h.

External Communication (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.")

Honors

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 392:191 and 392:192 Undergraduate Honors Tutorial (Chinese) or 392:191 and 392:192 Undergraduate Honors Tutorial (Japanese) during the senior year; enroll in 392:195 Senior Honors Thesis (Chinese) or 392:195 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 culminating 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 specialized training in Chinese language, literature and civilization, with a thesis; Program B is a prescribed curriculum program, without thesis, permitting a student to select courses of study under a wider choice 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 their 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 twinned 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 terminal 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 Biographical Research 3 s.h.
One of the following courses:
Introduction to Chinese Linguistics 3-6 s.h.
History of the Chinese Language 3 s.h.
Seminar in Chinese Linguistics 3 s.h.
Advanced courses in Chinese literature and civilization 6-11 s.h.
Thesis 4 s.h.

Program B (M.A. without thesis)

Advanced Chinese (beyond the first two years) 9 s.h.
Seminar: Methods of Biographical Research 3 s.h.
Advanced courses in Chinese literature and civilization 9-12 s.h.
One of the following courses:
Introduction to Chinese Linguistics 3-6 s.h.
History of the Chinese Language 3 s.h.
Seminar in Chinese Linguistics 3 s.h.
Additional courses in education, history, philosophy, art, journalism, linguistics, etc., depending upon the student's interest and objective 4 s.h.

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 Oriental Library 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 materials, the collection also includes works in most major languages of the Far East, and materials which are not necessarily of direct scholarly use to a Chinese scholar.

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. Economics examines 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, there are the requirements for the B.A. major in economics:

Courses Outside the Department

- 225/23 Elementary Probability and Statistics 3 s.h.
- 225/24 and 226/24 Quantitative Methods I and II 8 s.h.

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:

- Courses Outside the Department

  - 225/25 and 225/26 Calculus
  - 225/28 Probability and Statistics

- 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.

Honors 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 Costantini, Krause (Marvin Professor), Lloyd, Morgan, Nordquist, Peik, Wu, professeur émérite Olson; associés professors Albrecht, Balich, Barnard, Jeffers, Pogue, Ruffle, Siebert, Arents, Swanson; assistants professors Dent, Joseph, Redisch, Wensink, Williams.

Courses

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

The Department accepts a major responsibility for training teachers of English at all levels, the elementary school through graduate school. The undergraduate program is represented in programs for elementary and secondary school teachers as well as general preparation for graduate work. 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 undergraduate level, this goal is represented in programs for elementary and secondary school teachers as well as general preparation for graduate work. The Department also participates in the work of the Master of Arts in Teaching program of the College of Education. Although doctoral study in a Ph.D. is required, 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 of exploring a literary text. Especially, they should remember the importance of a broad educational experience for their own students. Finally, they undertakings 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 whose working for teacher certification must devote one semester of the year to professional training apart from coursework in the English Department. This Department also participates in a joint major in English and elementary education. Advisers for this program are specializations in elementary education. Those who want to complete the English major as a complete 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 plan must take them.

Students who are seeking certification for secondary teaching beyond other 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. Students in rhetoric in 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 no course in English should have considerably more training in the field.

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, music, sculpture, poetry, drama, film, television, architecture and the theatre, as well as in literature.

In more specific terms, the major should have learned to read effectively 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 able to judge between what is significantly new and what is merely novelty in writing. He should feel writing a pleasure, even though it might also be difficult and demanding, and he should have experimented with a variety of forms. He should understand this practical experience of writing work both 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 an intelligent analysis 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 approved 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 advised to take a summary of the field, The pamphlet On Designing an English Major gives detailed help in preparing such a plan. If each student is advised to select a broad chronological range in his study of literature, a sampling of several periods and some background material in literatures of other countries, especially in Biblical and classical literatures. 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 fine arts and offer means by which he may imaginatively formulate his experience. Finally, students contemplating graduate study in English or teaching as a career are counseled to include courses which will be especially relevant to their later work. Typically an English major takes about 45 semester hours in English.
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 his program credit for up to four seminar hours in 8:18 Fiction Writing and four seminar hours in 8:82 Poetry Writing, but only students who are admitted on a competitive basis to the Undergraduate Poetry or Fiction Workshops (8:85 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 program follows 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 seminar. In this time 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 engage 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 style.

Some of the educational advantages of these "semesters" are: the usual fragmentation of material is replaced, through comparisons, by integration, historical, critical and creative considerations infiltrate one another; learning becomes a cooperative venture; and students benefit from the plurality of instructional 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. Fewer 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 15 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 advisers. 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 (Mass.), Forest Park (St. Louis), Kirkwood (Cedar Rapids) or 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, preferentially 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 200-299 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

Regulating course, primarily for students not majoring in English, although credit may be applied to the requirements for the major:

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<tbody>
<tr>
<td>1: Modern Fiction</td>
</tr>
<tr>
<td>2: Modern Poetry</td>
</tr>
<tr>
<td>3: Modern Drama</td>
</tr>
<tr>
<td>4: Classical and Biblical Literature</td>
</tr>
<tr>
<td>5: Shakespeare</td>
</tr>
</tbody>
</table>

Introductory Courses in Critical Reading

Limited-enrollment courses primarily for majors, but appropriate for any undergraduate; some texts used are helpful in illustrative representations—problems in interpreting and evaluating literature. Students 101 and 102 require enrollment upon submission of writing as well as reading literature:

<table>
<thead>
<tr>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>101 Understanding Fiction</td>
</tr>
<tr>
<td>102 Understanding Poetry</td>
</tr>
<tr>
<td>103 Introduction to the Criticism of Literature</td>
</tr>
</tbody>
</table>

Representative Works Courses

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

<table>
<thead>
<tr>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>104 English Representative Works of the Renaissance</td>
</tr>
<tr>
<td>105 English Representative Works, 1500-1550</td>
</tr>
<tr>
<td>106 English Representative Works, 1550-1800</td>
</tr>
<tr>
<td>107 English Representative Works, 1800-1900</td>
</tr>
<tr>
<td>108 Representative Works Since 1900</td>
</tr>
</tbody>
</table>

Expository Writing Courses

Emphasizing convention in writing for all undergraduates: prerequisites necessary completion of freshman English requirement or equivalent:

<table>
<thead>
<tr>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>108 Expository Writing</td>
</tr>
<tr>
<td>109 Themes of the Renaissance</td>
</tr>
</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>
</tr>
</thead>
<tbody>
<tr>
<td>110 Undergraduate Writers Workshop: Fiction</td>
</tr>
<tr>
<td>111 Undergraduate Writers Workshop: Poetry</td>
</tr>
</tbody>
</table>

Honors Courses

Courses listed in students in the undergraduate Honors program and are given to students by special permission of instructor:

<table>
<thead>
<tr>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>108 Honors Proseminar</td>
</tr>
<tr>
<td>109 Honors Seminar</td>
</tr>
</tbody>
</table>

Literature Seminar Courses

Limited enrollment, ten-week literature courses emphasizing the reading of whole texts; discussions, 10 to 12 papers on other work as detailed in separate Department announcements; pre-registration required; literature seminar 1 satisfies all major requirements for literature before 1900; students should have taken at least one college-level literature course before registering in either course:

<table>
<thead>
<tr>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>110, 112, 113 English Literature Before 1500</td>
</tr>
<tr>
<td>114, 116, 118, 127 American and Contemporary British Literature</td>
</tr>
</tbody>
</table>

Independent Study Courses

Must be arranged with the student with instructor of choice prior to registration; ordinarily the student should consult instructor from whom he or she has previously taken a course:

<table>
<thead>
<tr>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>108 Undergraduate Honors Project</td>
</tr>
<tr>
<td>139 Special Project for Undergraduate</td>
</tr>
</tbody>
</table>

For Undergraduates and Graduates

Literature and Culture Courses

Primarily for undergraduates and beginning graduate students; these lecture courses are designed to either major works and authors within the context of the social, political, intellectual and artistic movements of their time; literary history is basic part of the work, but work goal is to show literature in the whole course of the intellectual history of this time. Students who have established backgrounds in history or related arts especially welcome: undergraduate majors in English urged to include at least one course of type in their major half of their major:

<table>
<thead>
<tr>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>110 Literature and the Culture of the Renaissance</td>
</tr>
<tr>
<td>112 History and the Culture of 18th Century England</td>
</tr>
<tr>
<td>114 Literature and the Culture of 19th Century England</td>
</tr>
</tbody>
</table>
### Interdisciplinary Courses

Courses of general interest, designed to encourage comparison between literary and the other arts and academic disciplines:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:100</td>
<td>Literature and the Film</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>6:101</td>
<td>Film Script Analysis</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>6:102</td>
<td>Television</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>6:106</td>
<td>Literature and Psychology</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>6:109</td>
<td>History</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>6:116</td>
<td>Literature and the Arts</td>
<td>5 s.h.</td>
</tr>
<tr>
<td>6:119</td>
<td>Literature and Science</td>
<td>2 s.h.</td>
</tr>
</tbody>
</table>

### English Education Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:107 Methods in English</td>
<td>3 or 6 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:108 Literature for the Adolescent</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:109 Introduction to English</td>
<td>3 s.h.</td>
<td></td>
</tr>
</tbody>
</table>

### For Graduates

#### Introductory Graduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:201</td>
<td>English Composition</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>6:202</td>
<td>Critical and Scholarly Approaches to Literature</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>6:203</td>
<td>Advanced Reading and Application</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>6:205</td>
<td>Literary Interpretation</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

#### For Teachers in the Two-Year College

Although open to all graduate students, purpose is primarily to offer theoretical and practical training for those who plan to teach in two-year colleges.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:225 Teaching Literature in the Two-Year College</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:229 Teaching English in the Two-Year College</td>
<td>1 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:251 Linguistic Foundations for the Deaf-education Student</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:226 Colloquium in English in the Two-Year College</td>
<td>2 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:252 Seminar: English in the Two-Year College</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:297 Teaching in a Reading Laboratory</td>
<td>2 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:298 Teaching in a Writing Laboratory</td>
<td>2 s.h.</td>
<td></td>
</tr>
</tbody>
</table>

### Graduate Workshops

For graduate students in the Writers Workshop, the Translation Workshop or the Writing Program, admission only by consent of the instructor.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:281 Norton Workshop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:282 Pennell Workshop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:283 Thoreau Workshop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:285 Seminar: Creative Writing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:250 International Literature Seminar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:251 Form of Fiction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:252 Form of Poetry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:253 Seminar: Problems in Modern Fiction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:254 Seminar: Problems in Modern Poetry</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Literary History

These courses cover the central material of English and American literature from the beginnings to the present; individual courses deal with very specialized literary history by period, with individual authors, with development of major genres and forms and with relationships of literature and its culture.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:251 Elementary Old English</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:280 Old French</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:250 Middle English Language and Literature</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:280 Old Norse</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:292 Middle English</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:293 The Poetic Halla</td>
<td>3 s.h.</td>
<td></td>
</tr>
</tbody>
</table>

### Literary Criticism

This group offers opportunity for study of literary theory and practice of criticism, including literary theory, open to qualified candidates for an advanced degree in English.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:301 European Fiction</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:302 Modern European Literature</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:303 American Fiction</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:304 American Romantic Literature</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:305 British Literature</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:306 Chaucer: Canterbury Tales</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:307 Medieval Literature</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:308 Renaissance and the Renaissance</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:310 The Age of Shakespeare</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:311 Shakespeare: Early Plays</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:312 Shakespeare: Later Plays</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:313 Shakespeare: Late Drama</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:314 English Comedy of the Renaissance</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:315 17th Century Literature, 1600-1660</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:316 18th Century</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:317 English Prose Fiction before the Novel</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:318 Augustan Literature, 1700-1740</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:319 19th Century Literature</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:320 Restoration Literature, 1660-1714</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:321 18th Century Literature, 1740-1830</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:322 19th Century Literature</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:323 19th Century Poetry and Prose</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:324 American Literature</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:325 American Romantic Literature</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:326 American Realist Literature of the 19th Century</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:327 19th Century American Literature, 1840-1860</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:328 American Literature, 1860-1900</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:329 American Literature, 1900-1945</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:330 20th Century American Literature</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:331 20th Century American Literature</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:341 20th Century American Literature</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:342 20th Century American Literature</td>
<td>3 s.h.</td>
<td></td>
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<tr>
<td>6:343 20th Century American Literature</td>
<td>3 s.h.</td>
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</tr>
<tr>
<td>6:344 20th Century American Literature</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:345 20th Century American Literature</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:346 20th Century American Literature</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:347 20th Century American Literature</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:348 20th Century American Literature</td>
<td>3 s.h.</td>
<td></td>
</tr>
</tbody>
</table>

### Contemporary Studies

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:302 European Fiction</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:303 American Fiction</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:304 American Romantic Literature</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:305 British Literature</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:306 Chaucer: Canterbury Tales</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:307 Medieval Literature</td>
<td>3 s.h.</td>
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<tr>
<td>6:308 Renaissance and the Renaissance</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:310 The Age of Shakespeare</td>
<td>3 s.h.</td>
<td></td>
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<td>6:311 Shakespeare: Early Plays</td>
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<td>6:312 Shakespeare: Later Plays</td>
<td>3 s.h.</td>
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</tr>
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<td>6:313 Shakespeare: Late Drama</td>
<td>3 s.h.</td>
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<tr>
<td>6:314 English Comedy of the Renaissance</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6:315 17th Century Literature, 1600-1660</td>
<td>3 s.h.</td>
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<td></td>
</tr>
<tr>
<td>6:331 20th Century American Literature</td>
<td>3 s.h.</td>
<td></td>
</tr>
</tbody>
</table>
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 chairman of the program in European literature and thought.

Staff: Professors Aspel (French and Italian), Baker (English), Bergman (Law), Davis (Political Science), Duke (Chemistry), Feilberg (German), Harlow (Business Administration), Obrecht (Music), Scharfenberg (Religion), Scharfing (Art), Stoll (Psychology), Waxman (Political Science), Willich (Sociology), Associate Professor Cameron (Speech and Dramatic Art), Jung (Zoology), Hopkins (Law), Hamley (English), ter Haar (German); assistant professor Klein (Physics)

Courses
33:151 The Pursuit of Happiness 2 to 4 a.h.
Introduction to the philosophy of various religions and cultures. The conflict between the concepts of happiness and virtue in Western thought. Readings from Plato, Aristotle, Socrates, Confucius, Buddha, and others.

33:152 The Good Society 2 to 4 a.h.
The role of the individual in society and the relationship of the individual to society. Readings from Plato, Socrates, Aristotle, Machiavelli, Shakespeare, Locke, Hobbes, and others.

33:153 Haunted by the Contemporary World 2 to 4 a.h.
Study of the contemporary world. Topics may include social, political, and economic issues.

33:154 Science and the Nature of Man 2 to 4 a.h.
Introduction to the scientific method in social and humanistic thought.

33:155 Form and Meaning in the Arts 2 to 4 a.h.
A survey of the arts and their role in society. Focus on various art forms and their influence on society.

33:156 Roots of Modern Culture 2 to 4 a.h.
A study of the cultural and intellectual roots of modern Western civilization.

33:157 Special Projects, 2 to 4 a.h.
Advanced study in an area of interest to the student.

33:158 Independent Study for Honors 2 to 4 a.h.
A study of an area of interest to the student under the guidance of a faculty member.

French and Italian
Department Chairmen: John T. Reddening, Jr.
Director of French, A. S. Frank (Italian), W. H. French (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 the 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 literatu.

French and Italian

The latter group almost invariably prepare for the M.A. or Ph.D. with junior/community college, college or university teaching as a goal.

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 assistanships are available to qualified graduate students. A certain number of EPDA fellowships in French (for prospective community college teachers), teaching-research fellowships, and University scholarships are available. Inquiries should be addressed to the Department Chairmen.

Several exchange assistantships 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 residency 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 9277 (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, 9:137 French Prose and Drama, 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 36 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 four-semester Composition and Conversation, 9:209 and 9:210 Advanced Composition and Conversation, 9:113 and 9:134 French Civilization, 9:130 Methods: High School Modern Foreign Language, 9:131 Language Laboratory Procedures, 9:132 Contemporary France, and 9:157 and 9:158 French Pronunciation and Dictation. 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, upon 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 investigations by completing two research papers in connection with courses taken.

Specific requirements for the Ph.D. in French must include 9:251 and 9:252 Old French, proficiency in a foreign language other than French, and competence in a second related field as defined by 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 in part 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 to contemporary literature—is represented by at least one scholar whose publications enable him to direct classes 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 Apold, Carretta, O'Gorman; professors emeriti Cahn, LeVox, Rastrelli; associate professors Groome, Honorey, Bokayan, Nowshagla, de St. Victor; assistant professors Satter, Tate, Wayne; assistant professor emeritus Kusner; inter- eneur Benayoufi

Laboratory Director: Winston J. Reese

French Courses
Primarily for Undergraduates
Students who have had some 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, their semester hours will be added to their graduation requirements.

A student may not receive, for either credit or quality points, an elementary course if he has already completed a higher level course for which the elementary course is an prerequisite.

9:1 Elementary French
For students who have no knowledge of French
9:12 French Literature of Commitment
9:13 Intermediate French
Recommended for students who plan to continue their study of French with second year, prerequisite: 9:12 or equivalent
9:14 Intermediate French
9:15 French Pronunciation
9:16 Second-Year Composition and Conversation
Recommended for the student who wishes to continue study of French or who wishes to improve his active command of the language. prerequisite 9:12 or equivalent
9:17 Second-Year Composition and Conversation
Continuation of 9:16; prerequisite: 9:12 or equivalent
9:21 French I
9:22 French II
9:23 French III
9:24 French IV
9:25 Spécial Work
9:26 Teaching
Prerequisite: 9:12 or equivalent

For Undergraduates and Graduates
9:18 Introduction to French Literature
From oral works ending in oral eighteenth century; great in French for French majors, is English for others; prerequisite: 9:12, 9:25 or equivalent
9:19 Introduction to French Literature
9:20 Introduction to French Literature
Continuation of 9:18, but may be taken as independent study from midterms to present
<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>5131</td>
<td>French and Italian</td>
<td>4</td>
</tr>
</tbody>
</table>

**Course Descriptions**

**Primary for Graduates**

- **French and Italian**
  - 4 credits
  - Prerequisite: 5112 or equivalent
  - Covers advanced topics in French and Italian

**For Undergraduates and Graduates**

- **French and Italian**
  - 3 credits
  - Continuation of 5112, may be taken as an independent unit
  - For graduate students

**Italian Courses**

- **Primary for Undergraduates**
  - 4 credits
- **Elementary Italian**
  - 3 credits
- **Intermediate Italian**
  - 3 credits
- **Advanced Italian**
  - 3 credits

**For Undergraduates**

- **First Year at the 10th Century**
  - 3 credits
  - Given in English
- **Second Year at the 10th Century**
  - 3 credits
  - Given in English

**Advanced Placement**

- **AP French and Italian**
  - 4 credits
  - Open to undergraduates with a minimum of two years of another foreign language and a graduate student who has taken a course in French or Italian
  - 3 credits
  - Continuation of 5112, may be taken as an independent unit
  - Given in English

**Advanced Placement**

- **AP French and Italian**
  - 4 credits
  - Open to undergraduates with a minimum of two years of another foreign language and a graduate student who has taken a course in French or Italian
  - 3 credits
  - Continuation of 5112, may be taken as an independent unit
  - Given in English
General Science

Program Head: Robert E. 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 advisor 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, Physic/Astronomy, Botany, Zoology and Mathematics.

Two options are available: completion of 20 semester hours in one department and eight semester hours in each of the 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 advisor 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
222M-20 Elementary Functions 3 s.h.
222M-25-6 Calculus I-II 8 s.h.
Electives 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 8 s.h.

Chemistry
4:1 and 4:4 Principles of Chemistry 6 s.h.
4:6 Elementary Chemistry Laboratory 2 s.h.

Total required course 4= 36 s.h.

Medical Technology
Directors: John A. Kopeke (VA Hospital), 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.
4:11-12 Organic Chemistry I-II 6 s.h.

Zoology
37:7 Principles of Animal Biology 5 s.h.
37:118 Parasitology 4 s.h.
37:119 Elective in zoology 3 to 4 s.h.

Mathematics
22M-43 Introduction to Statistical Methods 3 s.h.
22M-43 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 36-40 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.
4:12-12 Organic Chemistry I-II 6 s.h.
37:7 Principles of Animal Biology 5 s.h.
37:101 Principles of Human Genetics 3 s.h.
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.
72:4-5 Introduction to Human Physiology 4 s.h.
77:203 Introductory Radiation Biology 4 s.h.
99:161 Biochemistry 4 or 5 s.h.
Total required courses 34-36 s.h.

Physical Therapy
Coordinator: Terry B. 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 science, and 8 semester hours in a third science.
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

Chemistry
41 and 44 Principles of Chemistry I-II 6 s.h.
4.6 Elementary Chemistry Laboratory 2 s.h.

Zoology
75 Principles of Animal Biology 5 s.h.
75.101 Principles of Human Genetics 3 s.h.

Physics
29.1-2 College Physics 8 s.h.

Elective Courses in Required Sciences

Chemistry
4.7-8 General Chemistry 6 s.h.
4.9 General Chemistry Laboratory 2-3 s.h.
4.52 Chemistry in Our Lives 3 s.h.
4.11 Elementary Quantitative Analysis 4 s.h.
4.121-122 Organic Chemistry I-II 6 s.h.

Zoology
37.102 Principles of Modern Embryology 4 s.h.
37.109-110 Fundamental Genetics 5-8 s.h.
37.103 Comparative Vertebrate Anatomy 4 s.h.
37.112 Microscopic Anatomy 4 s.h.
37.118 Parasitology 4 s.h.
60.109 Human Anatomy 4 s.h.
72.151 Intermediate Physiology 5 s.h.

Pre-Medicine

Coordinator: James J. Rauker

Chemistry
41 and 44 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
37.103 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 require-
mements listed under "College of Medicine")
37.102 Principles of Modern Embryology 4 s.h.
37.103 Comparative Vertebrate Anatomy 4 s.h.
37.105 General Physiology 4 s.h.
37.107 Vertebrate Zoology 4 s.h.
37.109 Genetics 4 s.h.
37.110 Fundamental Genetics 4 s.h.
37.120 Protozoology 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.A. degree are required to earn an addi-
tional 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-Dentistry

Coordinator: James Faier

Required Courses
(For application to The University of Iowa College of Dentistry)

Chemistry
41 and 44 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
37.103 Principles of Animal Biology 5 s.h.

Electives: Any course(s) in zoology or botany to total at least an additional 3 s.h.
Total required courses 32 s.h.

Pre-Veterinary Science

Coordinator: James J. Rauker

Chemistry
41 and 44 Principles of Chemistry I-II 6 s.h.
4.6 Elementary Chemistry Laboratory 2 s.h.
4.111 Organic Chemistry I-II 6 s.h.
4.121-122 Organic Chemistry I-II 6 s.h.

Physics
29.1-2 College Physics 8 s.h.

Zoology
37.103 Principles of Animal Biology 5 s.h.
37.110 Fundamental Genetics 4 s.h.
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<tr>
<th>Botany</th>
<th>2:1</th>
<th>Introduction to Botany</th>
<th>5 s.h.</th>
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<td><strong>Science Teaching</strong></td>
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<td></td>
<td>37:3</td>
<td>Principles of Animal Biology</td>
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<td></td>
<td>Electives in botany and zoology (at least three semester hours in each department)</td>
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<td>Principles of Chemistry I-II</td>
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<td>or</td>
<td>42:1-122</td>
<td>Organic Chemistry I-II</td>
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</table>
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.
4:5 Elementary Chemistry Laboratory 2 s.h.
4:11 Quantitative Analysis 4 s.h.
4:121 Organic Chemistry I 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—26 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.
12:5 Historical Geology Laboratory 1 s.h.
12:6 General Astronomy 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 Astronomy 4 s.h.
Electives in Geology 8 s.h.
97:128 Meaning of Science 2 s.h.
97:130 History of Science 2 s.h.

Staff: professor Yager, associate professor Cowman, Phillips; assistant professors Sharp, Townsend; adjunct assistant professor Glass

Genetics

Courses Primarily for Undergraduates

387 Investigations in Science 5 s.h.
Social projects involving ability secondary school students; credit may be used for natural science core credits and for the major; may be repeated.

385 Science Survey 4 s.h.
Courses of broad conceptual science comprising science attention to societal implications of scientific research and modern technology.

386 Science Survey 4 s.h.
Experiences in laboratories and classrooms where science technology is examined; individual projects center major offering, several areas within the University will provide the basis for a segment of course.

97:58 Science Foundations I 4 s.h.
4-year interdisciplinary approach to areas of core fundamental concepts in science, principles, processes, and methods, related to elementary education majors.

97:58 Science Foundations II 4 s.h.
Aesthetic and scientific sense of the world, but with increased emphasis on course-design, experimental techniques, abstract models, broader hypotheses. Integration of science and writing with guiding theme of the scientific process emphasized; enrollment restricted to elementary education majors.

Courses for Undergraduates and Graduates

97:112 Advanced Science Foundations 4 or 5 s.h.
Comprehensive of 97:115 and 97:156, required of all elementary education majors who have not had either course open to elementary teachers with traditional background in one or more of the sciences.

97:119 Directed Study 4 or 5 s.h.
Preparation for independent study

97:128 Meaning of Science 2 or 3 s.h.
Expand elementary philosophy and logic which characterizes science, emphasis upon use of such concepts in teaching.

97:138 History of Science 2 or 3 s.h.
Major topics in development of twentieth century science, emphasis on early Greek, Romans and modern European science upon current concepts of scientific enterprise.

97:148 Problems in Integrating Teaching of Environmental Science 3 s.h.
A course for preservice teachers who plan to implement environmental studies programs in elementary schools, content from government, commerce, social science, biology, psychology, sociology, religion and related areas utilized in an attempt to provide insight into broad problems of environment and the specific problem and how these problems can be handled in an integrative way in schools.

Genetics

Program Chairman: Dawson Motier

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 his or her research study is frequently 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 science. Facilities of calculus in undergraduate study is 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 geneticists, especially for teaching, but it
involves a number of other scientists whose research includes
genetics.
The program is administered by an interdepartmental com-
mittee.
Staff: professor Brown (Zoology), Frankel (Zoology), Millik-
an (Zoology), Miether (Zoology), Weissner (Psychology),
Zellweger (Pediatrics), associate professors Chalkley (Bio-
chemistry), Conway (Biochemistry), Stix (Microbiology); assist-
ant professors Carlson (Botany), Follis (Microbiology), Cuscin
(Zoology), Hegmann (Zoology), Surzycki (Botany), Walker (Mi-
crobiology).

Courses

<table>
<thead>
<tr>
<th>Subject</th>
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<td>Microbiology</td>
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<td>Zoology</td>
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</table>

Geography

Department Chairman Clyde F. Kahn
Degrees offered: B.A., B.S., M.A., Ph.D.

Vanished is the legendary encyclopedia geographer examed
with isolated bits of information rearing from the capital city
of Mauritania to the annual Yakima valley apple 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 pro-
duction, 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 prob-
lems confronting modern societies, such as air and water pollu-
tion, traffic jams, the development of ghettos in large cities, the
rapidly increasing population, and conflicts between nations. An
increasing number of undergraduate students is discovering that a major
in geography provides them with concepts and methods for or-
ganizing cities, market regions, school districts or other human
institutions.

Most 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 tech-
niques necessary for analyzing those 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
obtain 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
environmental problems, the easing of internal and interna-
tional conflicts, and many other endeavors. Today's geography
is man-centered and contributes to the decision-making proc-
esses 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 man-
agement, 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 perspective of and his subsequent interactions with
the earth as a system. Courses in geography are commonly re-
quired of students preparing to enter the teaching profession at
the elementary and secondary school levels, of students who
want to work in urban and generalized planning, and as a back-
ground 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 under-
graduate students; it provides innovative and relevant prepara-
tion of undergraduate majors in careers in which an understanding
of geography is basic or it joins in significant interdepartmental programs involving regional, urban and envi-
ronmental components.

A number of geographic themes and principles compose the
intellectual framework of the discipline and serve as unifying
threads through all courses constituting the Department's pro-
gram. 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.

Geographic 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 skills and 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 44.35 Introduction to Urban Geography—may be applied toward the social 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, 44.135 Political Behavior and Urban Spatial Structure, 44.135 Internal Spatial Structure of Urban Areas, and 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.

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 Habitats of the United States.

All undergraduate students majoring in geography must take a course in statistics, such as 225, Introduction to Statistical Concepts and Methods, or its equivalent, such as 44.108 Quantitative Methods or 3411 Theory, Research and Statistics.

Students in the B.S. program must also complete 22M:25 Calculus or its equivalent.

Students who wish to declare majors in geography are urged to complete the B.S. program. Those contemplating careers in foreign service should complete three years' study of the appropriate language.

The Association of the American Geographers publishes a monthly bulletin, Jobs in Geography.

The Graduate Program

The rules 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 score 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 fulfill the requirements of the M.A. degree 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 44.108 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 44.108 Quantitative Methods, 44.201-282 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
operation in written examinations during the first week of the first semester. The student 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 44350 each semester during the academic year. 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 include appropriate graduate courses, seminars, and research in geography, depending on the interests of the student. Courses in disciplines closely related to the student's objectives and interests; courses which satisfy the test requirements; 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 major area of specialization within the discipline and to secure a faculty adviser. During the second year in residence, if possible, the doctoral student should declare a specific field of specialization within his or her major 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 adviser, 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 test requirements for the Ph.D. candidates are of two kinds. One is the course 44-208 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 appropriate dissertation which must be defended in a final oral examination.

All doctoral candidates are expected to have supervised experience 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-teach" 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 under graduate 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 Georaphy 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 use can be made of their special problem areas of competence. 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 and man, 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.
All graduate students in geology are required to perform teaching, research or other appropriate service 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 broad, 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 certain situations and with faculty approval the student may pursue 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 = 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 these are considered particularly appropriate if the area is wisely 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 months' 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 will submit a written report on the activity and on the geologic principles 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 examination covers coursework and work done in lieu of the thesis.
The Master of Arts in Teaching (Geoh Science)

This program enables students to combine certification to teach secondary school with participation in a specialized graduate curriculum. It is awarded by the College of Education, the M.A.T. degree requires at least 20 semester hours of graduate study in professional 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 facets 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 crosslisted 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-Miningology
- 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
- Paleocene Geology
- Vertebrate Paleontology
- Palynology
- Palaeontology
- Palaeobotany
- Palaeoecology
- Biostratigraphy
- Geomorphology
- General Geomorphology
- Glacial and Piedmontesque
- Remote Sensing
- Environmental Geology
- Ground Water
- Remote Sensing
- Ecology
- Other Minor Subjects
- Botany
- Zoology
- Chemistry
- Physics
- Geography
- Hydraulics
- Archaeology-Antropology
- 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 Physics departments in service, ex-Petroleum, 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 Paleontologic 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 breaks provide 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 Ozarks. 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 preside 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 classes 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.

B.S. students: 
Furhstetter, Gneiss, Hopper, Tuttle, Adjacent professor Shibilski, Turek, Tuttle, professor Emeritus Testing: associate professor Clark, Heckel, Kapper, McCormick, Sennett, Smiley, associated professor Baker, Sarace, show; professor Emeritus Springer

Laboratory Manager: Roger C. Rudisell
Librarian: Vera Bacon
Technician: Kenneth H. Kern
German 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**
- 13:11 First-Semester German 3 s.h.
- 13:12 Second-Semester German 3 s.h.
- 13:21 Third-Semester German 3 s.h.
- 13:22 Fourth-Semester German—Reading 3 s.h.
- 13:23 Fourth-Semester German—Composition and Conversation 3 s.h.
- 13:22 and 13:23 may be taken concurrently, if desired, or in tandem.

**Third Year**
- 13:31 German Classics 3 s.h.
- 13:32 German Classics 3 s.h.
- 13:33 Intermediate Composition and Conversation 3 s.h.
- 13:34 Intermediate Composition and Conversation 3 s.h.

**Fourth Year**
- 13:101 Advanced Composition and Conversation 3 s.h.
- 13:105 German Cultural History 3 s.h.
- 13:111 Survey of German Literature 3 s.h.
- 13:112 Survey of German Literature 3 s.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 could 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.

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**German Department: Edward Surganian**

Degree offered: B.A., B.A. Phil.

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 enterprise, 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
German

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:
13:31 German Classics
13:32 German Classics
13:33 Intermediate Composition and Conversation
13:34 Intermediate Composition and Conversation
13:101 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, programs, discussions, regular reports and a semester 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 materials 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, at least 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

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<th>Semester Hours</th>
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<td>13:103</td>
<td>3 s.h.</td>
<td>12:56</td>
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<td>*13:105</td>
<td>3 s.h.</td>
<td>12:27</td>
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<tr>
<td>*13:111</td>
<td>3 s.h.</td>
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<tr>
<td>*13:112</td>
<td>3 s.h.</td>
<td>12:28</td>
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<td>13:201</td>
<td>3 s.h.</td>
<td>12:84</td>
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<td>13:202</td>
<td>3 s.h.</td>
<td>12:85</td>
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<td>13:285</td>
<td>3 s.h.</td>
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<tr>
<td>13:241</td>
<td>3 s.h.</td>
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<td>13:243</td>
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<tr>
<td>13:245</td>
<td>3 s.h. (any one)</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 12:285 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 degree of German and the Graduate College (see "Graduate College"). The candidate may concentrate in either Germanic linguistics 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 graduate students 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 candi-
didates 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 compre-
henstive exams can be administered.

Required Courses: Doctor of Philosophy Degree, Concentra-
tion in German Literature

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Required Courses: Doctor of Philosophy Degree, Concentra-
tion in Germanic Linguistics

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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 or-
dinarily expected to register for the second year of college Ger-
mans (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. Prodi-
cency-placement exams are given to students in whose cases the
required procedure above does not seem necessary.

Students electing to satisfy an eight-quarter-hour minimum
foreign language requirement in German (i.e., B.S., B.B.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 12-semester-
hour minimum foreign language requirement for the B.A. de-
gree, may do so by completing, in addition to the nine-semester-hour basic course sequence above, a fourth-semes-
ter course. For this fourth-semester 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 if 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 struc-
ture of German language.

13:18 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 Heroic and Erotic Literature of the Middle Ages
4 s.h.

Masterpieces of this period, including Beowulf, The Nibelungenlied and Tristan
read in English translation; additional second-semester core requirement in literature; also
designed for letters 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 grammar
reviewed; emphasis on simple conversation, composition and essay writing.

Note: A student who has had all of three of the units of the basic course sequence
or equivalences has an option of taking either 13:22 or 13:23 for his or her fourth
semester; courses 13:22 and 13:23 in no way duplicate each other, as they may be
taken concurrently or in credit.

13:22 Fourth-semester German: Reading
3 s.h.

Standard fourth-semester course for students satisfying foreign language require-
ment for B.A. degree; thirteenth-week of German Grammar; reading of basic but
representative literary works.

13:23 Fourth-semester German: Elementary Composition and Conver-
sation
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, especially in extending compositions, delivering speeches, carrying on
conversations in German.

13:31 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 10:22.

13:52 Intermediate Composition and Conversation
3 s.h.

Practice in translation of selected English texts, from reading comprehension, from
analysis of word meanings and from analysis of sentence structures; emphasis on
oral comprehension and oral expression; prerequisites: 13:22 or equivalent.
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 want 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)

- Satisfaction of Historical-Cultural Core requirement; prospective history majors are advised, but not required, to complete this requirement by taking 11:29-30 Problems in Human History or 11:31-32 Western Civilization

- 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

- 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)

- Core courses; any two chosen from 11:29-30 Problems in Human History and 11:31-2 History of Western Civilization (or equivalents, for transfer students)

- 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

- 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:
History

- A minimum of 24 semester hours of work in history, with at least nine hours in the 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 (Plan A).
- 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 preservation 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 subcategories 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 topics 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 work in intellectual history and the relation of thought to society.

Graduate Admission

All applicants for admission, whether for the M.A. or the Ph.D. program, must meet the general requirements for admission set by the Graduate College. In addition, they must take 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 elect 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 cases 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 in each of 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 readings 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 examiners 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 semester hours must include at least 18 semester hours in 200-level courses in the major, except for thesis credit. 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 semester 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 16:298.399 and 26:112). Otherwise the candi-
date, 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 their dissertation super-
visor. The Department has no common language requirement for the Ph.D., but once 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 very 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 super-
visor 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 re-
quired by the Department are that the candidate must be exam-
ined 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 European 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 Department may define and limit the individual fields for the Ph.D., as appropriate for each field, the form of the written examination, which may take the form of a syllabus, a critical bibliography, a topical paper, or a paper or combination of these or other forms which the commit-
tee deems suitable. The oral examination will focus on issues and problems arising from the examination papers. Once he or she has undertaken the examination, the candidate must complete it; if he or she does not do so he or she will be considered 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 exam-
ination 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 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 Harry 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 Presi-
dential Library in West Branch 10 miles away possess additional research materials of great value.

Qualified graduate students are invited to apply for fellow-
ships and assistantships. Inquiries should be directed to the De-
partmental office.

Staff, professors Akeddie, Gelfand, Geese, Goldstein, Hale, Hawley, Horwitz, James, Laffee, Mad, Palealast, Persons, Robbough, Schoenbaum, Spitzer, Sutherland, professor Ameri-

can Living: associate professors Dystra, Henneser, Kerber, Larmour; associate professor Large; instructors James, Moens

Courses Primary for Undergraduates

16:51 Survey of American History, 1600–1857
16:52 Survey of American History, 1857–Present
16:58 Development of religious thought, personal and institutional life in United States in context of growth of American culture; some as Religion 32:72
16:59 Religion in American History 1807–Present

16:60 Introduction to Latin America

16:61 Individual Study Undergraduate
16:62 Individual Study Undergraduate
16:63 Honors Tutorial
16:64 Honors Tutorial
16:65 Honors Seminar: Problems in European History
16:66 Honors Seminar: Problems in American History
16:67 Honors Seminar
16:69 Historical Background of Contemporary Issues

Courses for Undergraduates and Graduates

Ancient and Medieval History
16:100 Historical Background of Contemporary Institutions
16:101 Survey of the Ancient Near East
16:102 Social, economic, political and intellectual history of ancient civilization from Mesopotamia to end of empire of Alexander the Great, not open to freshmen
16:103 Survey of the Hebrew Bible and Rome

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ness administration, computer science, journalism, and radio and television are recommended.

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 interests; a second year of foreign language; 23:MK 25 Calculus I; 4 121 Organic Chemistry I; 59:120 Chemistry of Biological Materials; 59:130 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
Honors 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 Honor's thesis is required of all and an examination is required. Under the guidance of the advisor, 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 38 semester hours of graduate work without a thesis, in addition to adequate prerequisites 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 undergradu- ate 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, Osbome; associate professor emeritus Smith; assistant professors Mohamed, Parman, Skjølver, Stevens, Wolfson, Lecturers Jenkins, Schell, instructors Bader, Barrington, Cannon, Dorfman, Fowles, Haas, Savage, Williams.

Courses Primarily for Undergraduates

17:15 Growth and Development of the Young Child 3 a.h.
Growth and development of young children; emphasis on factors underlying growth and change
17:21 Introductory Food Study 3 a.h.
Basic principles in preparation of food products
17:41 Principles of Nutrition 3 a.h.
Nutrition of the body; physiological functions of nutrients in the body; planning for good nutrition, care of foods
17:60 Design for the Home 3 a.h.
Application of design principles in selection and arrangement of household interiors and furnishings; lecture and studio problems
17:74 Interior Decoration I 2 a.h.
Planning of dwellings and their furnishings considering social, psychological, cultural, economic and aesthetic factors; design and color schemes; gives emphasis to: Illumination (Art. 18:1 or 2, 17:60 or 61, 17:80) or consent of instructor
17:70 Clothing 3 a.h.
Clothing construction methods; pattern alteration; fitting problems
17:71 Intermediate Clothing 3 a.h.
Construction of clothing using a variety of fabrics, designs and techniques; selection of fabrics as a social form; principles of garment design; or consent of instructor
17:72 Clothing Design and Selection 3 a.h.
Principles of design applied to current fashion in a modern environment; process of clothing selection for men and women
17:76 Tissue Fibers; production and properties; fabric constructions and finishes
17:81 Textiles 3 a.h.
Chemical structure, physical and chemical properties of natural and man-made fibers; properties and identification of fabrics; problems in textile research and analysis of fibers; principles of food preparation;ografía; Chemistry 41
Courses for Undergraduates and Graduates

17111 Administration of Family Resources 3 s.h.

17115 Principles of Family Financial Planning; preprerequisite: Economics 601 or consent of instructor. 3 s.h.

17116 Marriage and Family Interaction 3 s.h.

17117 Contemporary American Marriages and Family Relationships, including study of non-married, marriage and family interaction; preprerequisite: Psychology 311 and Sociology 241, or consent of instructor 3 s.h.

17118 Parent-Child Relationships 3 s.h.

17119 Synthesis of research related to parent-child relations in sample family situations 3 s.h.

17120 Directed Studies in Family Development 3 s.h.

17121 Nutrition and Food Behavior 3 s.h.

17122 Nutrition and Food Behavior 3 s.h.

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17215 Nutrition and Food Behavior 3 s.h.

17216 Nutrition and Food Behavior 3 s.h.

17217 Nutrition and Food Behavior 3 s.h.

17218 Nutrition and Food Behavior 3 s.h.

17219 Nutrition and Food Behavior 3 s.h.

17220 Nutrition and Food Behavior 3 s.h.

17221 Nutrition and Food Behavior 3 s.h.
Hospital and Health Administration

Program Director: Gerhard Hartman
Degree 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 confronting in business, education or government. Certain vital aspects of hospital and health administration—policies, 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 advantageous, 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 administrator.

While the curriculum stresses the conceptual unity and general nature of the administrative decision-making process, courses are designed to acquaint the student with the institutional environment of contemporary hospitals and health organizations. Administrative problems unique to health administration 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 develop 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 setting. The case-study and role-playing approaches are used in the seminar setting, and subject matter is drawn from all administrative specialties. Problems are posed in terms of 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 understanding of essential social science research techniques.

The program of study culminates with preparation of the master's thesis. Research for and writing of the thesis is undertaken 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 addition 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 academic 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 combine their training through the doctoral degree may be a joint program for the master's and doctor's degree.

Staff: professor Hartman; assistant professors Amidon, Brown, Tor eer, instructors Alger, Dikes, Johansen

on leave

Courses
80:101 Fundamentals of the Modern Hospital or, or.
Management or in hospital management and health services
80:202 Fundamentals of Modern Hospital and Health or.
Administration or.
Continuation of 80:202
80:203 Principles of Hospital and Health Administration or.
Emphasis on development of understanding of human relations and skills required for effective administration of hospitals and health organizations, business, medicine, and field trips.
80:204 The Modern Hospital in Society or.
Describes problems in hospital administration and health care administration
80:205 Advanced Administrative Aspects of Medicine or.
Lectures and discussions to present a research problems peculiar to medical care administration
80:206 Advanced Hospital and Health Administration or.
Interpretation and utilization of medical care in hospital administration, statistics, law, public policies, ethical management, community relations
80:227 Seminar: Problems of Administrative Behavior in the Modern Health Organization or.
Case study of institutions, role-playing and similar approaches to develop student's administrative skills.
80:208 Problems of Administrative Behavior in the Modern Health Organization or.
Continuation of 80:207
80:209 Current Developments in Hospital and Health Administration or.
Experiences in health care system, study of problems, case studies and approaches in hospital and health care administration emphasized, workshops, lectures and field trips.
80:211 The Health Hospital and Health Administration or.
Original study, review and presentation of a problem area in health-care administration
80:212 Rural Relations in Health-Care Facilities or.
Health manpower status, labor law for health-care facilities, conflict management, motivational and organizational theory of labor in health-care areas
80:213 Financial Management of Health-Care Organizations or.
Analysis of financial management problems in health-care facilities with emphasis on current and long-range financial requirements, administrative evaluation of alternative funding methods, examination of costs, budgeting, cost estimation and financial aspects of third-party payers
80:214 Health Care in America or.
Evolution of governmental role in the health-care system
80:215 Contemporary Health-Care Issues or.
Perspectives in health and hospital care, consumption, with special emphasis on community hospital and evolving role of hospital trustees, physicians, and administrators
80:202 Seminar: Hospital and Health Administration or.
80:202 Seminar: Hospital and Health Administration or.
80:203 Advanced Hospital and Health Organization and Management or.
Comprehensive course covering all phases of hospital organization and planning
80:204 Advanced Hospital and Health Organization and Management or.
80:205 Research: Hospital Administration or.
80:206 Research: Hospital and Health Administration or.
80:207 Individual Study or.
80:208 Clinical Education in Hospital Administration or.
80:209 Clinical Education in Hospital and Health Administration or.
Continuation of 80:208
80:206 Medical Education in Hospital and Health Administrations or.
Introduction to administrative problems in health administration and from related areas such as business administration, sociology, public health and education

Italian
See "French and Italian"

Journalism
Director of School Mantle E. MacLean, Jr, Associate Director: Albert D. Talbot Degree offered: B.S., 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. Whether a journalist chooses to work for a local or a national paper, his information and the effects of his work—what happens when the products of their creations are consumed by a reader, viewer or listener—have far-reaching implications.

The Basic Program
Our program in general journalism requires 24 semester hours of coursework or journalism for the major. The student must prepare courses in this major, and 24 semester hours of English and 24 semester hours of history. The student must pass a competency test in his major field.

The student majoring in journalism is required to complete 40 semester hours of journalism courses.

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ters of Communication and Communication Laboratory com-
prise the first-year studies. They are followed by two semesters of
Communication and Mass Communications Laboratory.
The general course is scheduled for about two hours a day,
five days a week. Sometimes all students meet together; some-
times they meet in small groups. Often students schedule their
own time to work on projects or attend short courses.
Over the two-year period the general courses include:

- Faculty presentations of philosophy, theory and cases as
  a basis for understanding basic skills in journalism;
- Short courses and self-study units in which students de-
  velop writing, editing, photography, layout, interviewing
  and similar skills needed for their work in the laboratory;
- Task force units of students who develop such projects as
  turning out a whole issue of a nearby newspaper;
- Professional journalist series, in which practicing journal-
  isms describe their work as columnists, foreign correspond-
ents, newspaper editors and political cartoonists;
- Colloquium series, in which scholars, economists, philoso-
  phers, sociologists, businessmen and government officials
  suggest implications of their work; and
- Assigned readings and written assignments.

In the four semesters of laboratory work, students experiment
in solving journalistic problems. They work in teams, forming
"media enterprises." Second-year students edit, lay out, produce
and distribute their products—newspapers, magazines, video
shows, audio shows—while first-year students write, take pic-
tures, film or videotape independently or under the direction of
second-year students or faculty members.

The program is individualized, building upon the various
levels of skill students have when they enter the program. Short
courses—from five to ten sessions—are offered in many specific
skills of mass communication. Students decide which skills they
want to learn and fit the short courses into their schedules. Short
courses are offered in photography, print media, broadcasting,
film, research skills and other areas.

Students work together and in competition with each other.
Throughout the two-year period, there are frequent meetings
of all faculty and students in the program.

Required Courses for Undergraduate Program

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>19:101</td>
<td>Communication I</td>
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<tr>
<td>19:102</td>
<td>Communication Laboratory I</td>
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<tr>
<td>19:103</td>
<td>Communication II</td>
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<tr>
<td>19:104</td>
<td>Communication Laboratory II</td>
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<tr>
<td>19:105</td>
<td>Mass Communication I</td>
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<tr>
<td>19:106</td>
<td>Mass Communication Laboratory I</td>
</tr>
<tr>
<td>19:107</td>
<td>Mass Communication II</td>
</tr>
<tr>
<td>19:108</td>
<td>Mass Communication Laboratory II</td>
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</tbody>
</table>

Prerequisites

All majors must meet the requirements of the College of Liberal
Arts (see "College of Liberal Arts")

Electives

In addition to the 24 semester hours of general journalism
courses, there are elective courses including photjournalism,
picture editing, radio-television news, public relations, history,
law, writing, news-editorial problems and others. However, no
more than 36 hours in Journalism may be counted 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 sec-
condary 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.

Transfering

Journalism courses taken at other colleges and universities will
transfer as specified but, in most cases, transfer students should
expect to spend two years at Iowa to complete the general jour-
nalism 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 stu-
dents 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 thought-provoking subjects and topics 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, magazines, public relations, radio, television, advertising, journalistic education, photojournalism, etc.).

The student satisfies the balance of the requirements with elective courses chosen in consultation with his or her adviser and the two other 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 organizational systems 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 (19.300) 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 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 his or her third advisor, 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 doctorate. 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 act as the independent observer.

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, typog- raphy, audio taping, video taping, typing, copy preparation and print production. The newsroom of the University radio station, WUII, serves as a laboratory for broadcast, journalism courses.

Many pre-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 students may use, such as tape recorders, still cameras, motion picture cameras, projection 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 faculty 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 programs activities. The Center engages in the publication of books, an international scholarly journal and an annual papers series; it contracts for research or consultations with government and private agencies on communication-related problems; and it develops seminars, colloquia and symposia on a wide range of communication-related issues both here and abroad.

Staff: Gallup professor Thayer; professors Duncan (on leave), MacLeod, Moeller; associate professors Fox, Hardt, Kottman, Talbott; assistants professors Ausbro, Costello, Hunt, Zima; instructors Ansett, Reaver, Butler, Coon, Schenck, Marlin, Murphy, Tripp

Special Courses

19.336 Language and Communication 1, 2 a.h.

Reading and Discussion of Papers on Current Communication Problems 1, 2 a.h.

Reading and Discussion of Papers on Problems in Mass Communication 1, 2 a.h.

Reading and Discussion of Papers on Issues in Mass Communication 1, 2 a.h.

Reading and Discussion of Papers on Theories 1, 2 a.h.

Reading and Discussion of Papers on Theories of Communication 1, 2 a.h.

Reading and Discussion of Papers on Theories of Journalism 1, 2 a.h.

Reading and Discussion of Papers on Theories of Public Relations 1, 2 a.h.

Reading and Discussion of Papers on Theories of Advertising 1, 2 a.h.

Reading and Discussion of Papers on Theories of Mass Communication 1, 2 a.h.

Reading and Discussion of Papers on Theories of Communication Theory 1, 2 a.h.

Reading and Discussion of Papers on Theories of Information 1, 2 a.h.

Reading and Discussion of Papers on Theories of Media 1, 2 a.h.

Reading and Discussion of Papers on Theories of Journalism 1, 2 a.h.

Reading and Discussion of Papers on Theories of Political Communication 1, 2 a.h.

Reading and Discussion of Papers on Theories of Social Communication 1, 2 a.h.

Reading and Discussion of Papers on Theories of Economic Communication 1, 2 a.h.

Reading and Discussion of Papers on Theories of Legal Communication 1, 2 a.h.

Reading and Discussion of Papers on Theories of Medical Communication 1, 2 a.h.

Reading and Discussion of Papers on Theories of Religious Communication 1, 2 a.h.

Reading and Discussion of Papers on Theories of Educational Communication 1, 2 a.h.

Reading and Discussion of Papers on Theories of Cultural Communication 1, 2 a.h.

Reading and Discussion of Papers on Theories of International Communication 1, 2 a.h.

Reading and Discussion of Papers on Theories of Interpersonal Communication 1, 2 a.h.

Reading and Discussion of Papers on Theories of Organizational Communication 1, 2 a.h.

Reading and Discussion of Papers on Theories of Interpersonal Communication Theory 1, 2 a.h.

Reading and Discussion of Papers on Theories of Organization Communication Theory 1, 2 a.h.

Reading and Discussion of Papers on Theories of Interpersonal Communication Theory 1, 2 a.h.

Reading and Discussion of Papers on Theories of Organizational Communication Theory 1, 2 a.h.

Reading and Discussion of Papers on Theories of Interpersonal Communication Theory 1, 2 a.h.

Reading and Discussion of Papers on Theories of Organizational Communication Theory 1, 2 a.h.
Courses Primarily for Graduates

19201 Media Ethics 3 a.h.
Kathleen is knowledge of ethical principles related to media and communication products, in particular, mass media and other mass communicators. Second semester 19303 Media History 3 a.h.

19351 Seminar: Current Issues and Problems 3 a.h.

19410 Professional journalism practice for professional journalists, including courses in which students report for newspapers, magazines, radio and television stations, advertising and public relations firms, photojournalists, research, journalism education, etc. Second semester 19510 Seminar: Advanced Editorials 3 a.h.

19533 Seminar: Topics in International and Comparative Communication 3 a.h.

19651 Seminars: Special Topics in International and Comparative Communication 1-4 a.h.

Courses for Doctoral Students

19200 PhD. Seminar 2 a.h.

19301 PhD. Research Practicum 2 a.h.

19303 PhD. Dissertation 4 a.h.

19395 Seminar: Communication and Change 2 to 4 a.h.

19495 Seminar: Communication and Change 2 to 4 a.h.

Latin

Sec: "Classics"

Letters

Director of School: John G. Garber

Degree: PhD. or Ed.D.

The major in letters takes literature as its subject. By its international orientation, it provides an alternative to courses of study in a single national language and literature. As an interdepartmental program, it offers students the opportunity to study literature in its broader aspects, as something of interest for itself as well as for what it tells about culture, society and history. A variety of students choose to study in letters. The program is not necessarily preprofessional. Students looking forward to a teaching career in literature or to graduate work in comparative or national literature take the B.A. as letters. Future professionals in such fields as medicine and law who want a general humanistic undergraduate experience are equally invited to investigate the letters degree, as are those who simply desire to develop the range of literary experience in different times and places. In recent years it has become increasingly clear that the study of literature can be pursued in varying ways. To study only one
national literature, or to ignore other forms that are 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 translations. Letters, speaking, gesturing, reading—our different means of communication still have much in common. The undergraduate program is the School of Letters offers a way to discover the variety of literature work 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 acting 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. Nagel, chairman (English and Comparative Literature), Daligorgue (English and Comparative Literature), Frank (Spanish and Portuguese), Gillenius (Speech and Dramatic Art), Greene (French and Italian), Holzmark (Classics), Parkes (German), Weber (Russian), Woerner (English)

Courses

For other course offerings in literature for the nonspecialist, refer to the sections of the following individual departments and programs which are members of the School of Letters.

American Civilization

English

French and Italian

German

Literature

Russian

Spanish and Portuguese

Speech and Dramatic Art

Library Science

Director of School Frederick Wessman

Degree offered: M.A.

Undergraduate Program

There is no undergraduate major in library science. Juniors and seniors may enroll in the introductory library science and children's literature courses (100-level). If later accepted in the graduate program, students will be allowed to substitute advanced library science courses for those already taken.

Graduate Programs

The Library School's Master of Arts degree program provides the accepted professional preparation for careers in all types of libraries and is accredited by the American Library Association. The School also offers a nondegree graduate program for certification in school librarianship.

Its graduates hold positions, in approximately equal numbers, in public, school and academic libraries, serving as administrators, bibliographers, catalogers, reference specialists or children's librarians.

The Master of Arts degree in library science requires 33 semester hours of graduate credit on which a grade-point average of at least 2.5 must be earned. In addition, the student must pass a written comprehensive examination. M.A. candidates choose their coursework in the following way:

Required courses (18 semester hours):

21:152 Reference I

21:152 Cataloging and Classification

21:153 Selection of Library Materials

21:154 Introduction to Librarianship

One of the following type-of-library courses:

21:231 The Public Library

21:237 The College and University Library

21:237 School Media Center Administration

One of the following bibliography courses:

21:241 Bibliography of the Humanities

21:243 Bibliography of the Social Sciences

21:245 Bibliography of the Sciences

Elective courses (15 semester hours)

Most students are expected to take the remainder of their elective hours in library science courses. However, when career objectives indicate and with the consent of the advisor, the student may take elective hours in other university departments, especially in closely related areas such as computer science, educational media, urban and regional planning, municipal government, etc.
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 earned in this way. Most students, however, are advised to undertake the internship program. The program normally requires two semesters and one summer of resident study; or, in the case of students attending summer school only, a minimum of four summer sessions.

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 85 semester hours of study in the liberal arts and sciences;
- At least one year of college credit (six to ten semester hours) in a modern foreign language with a grade of C or better;
- Satisfactory scores on the Graduate Record Examination Aptitude Test.

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 requested 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, or they may pursue the nondegree certification program described below.

The certification program, a 38-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.

Ten semester hours of transfer, correspondence and extension credits completed at either the undergraduate or graduate level may be applied towards the requirements for certification, provided such credits have relevance to the program. In addition, the student must hold an elementary or secondary school teaching certification as specified by the State Department of Public Instruction.

All candidates for certification must complete the following core requirements:

- Required courses (18 semester hours):
  - 211:1 Reference I
  - 211:2 Cataloging and Classification
  - 211:3 Selection of Library Materials
  - 211:4 Introduction to Librarianship
  - 212:1 School Library Administration
  - 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: 211:133 Children's Literature, 211:124 History of Children's Books, 211:123 Practice in Libraries, 211:122 Literature for Adolescents, 211:202 Libraries and Storytelling for Younger Children, 211:221 Multimedia Concepts in Libraries, 211:234 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
New quarters for the School of Library Science in the south wing of the University's Main Library provide well-planned facilities for the varied instructional and research activities of the School. Included are laboratories for bibliography, cataloging and multimedia study, as well as a separate Departmental Library science library.

All of the resources of The University of Iowa libraries are available to 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 60 professional staff members.

In addition to the University Libraries, students have access to the vast multimedia resources in Iowa City and nearby communities for clinical and laboratory purposes, the State Historical Society 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.

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.

Staff members: Osborn, Weiseman, associate professor; Newcomb, assistant professor; Haines, Rogers, instructors; Asp, Lange, Administrative Assistant; Edel Bloem. Librarian: Karen S. Hildebrand. Affiliated Staff: Dale M. Berz, G. Robert Carlesa, Leslie W. Dunlap.
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 anthropological theory or in linguistics, or a balance of the two. The only explicit requirements are the acquisition of two appropriate research tools from a list which includes a foreign language, statistics, symbolic logic and computer programming, satisfactory completion of a basic series of courses in linguistics and in anthropology (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 the ethnographic area); 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 or both of the two areas with further work or may achieve a balance between the two. At the completion of the core program, each student's achievement is evaluated by a joint committee of the two departments, and appropriate recommendations are made.

It is not necessary that the student entering the program have an undergraduate major in either anthropology or linguistics. However, the student has had the equivalent of the introductory courses in linguistics and anthropology (103:200 and 113:101) 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 foundation 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 be a member of teaching and research as a linguist in a university English department, but his or her training under this program 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, art, etc.

The linguistics area of the program is planned in consultation with the student's advisor. It is expected to include work in syntax, phonology and dialectology. The English linguistics area

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 linguistics 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. Gradu- ate 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.

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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—in the structure 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.

Library study includes, at least, Brownell Chaucer and Shakespeare, 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 Provençal 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 Germanic or one of the other old 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 audiometric chamber. There is also a remote typewriter terminal connected with the IBM 360/50 computer at the University Center. The Faculty

Although the Department of Linguistics is new (established in September, 1970), it has a growing reputation not only in the West 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 observed, and 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 15 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 “drop-in 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 senior 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: professors Hockett, MacGregor, McLaughlin, Poff, associate professors Wachter, Suga, assistant professors Koslowsky, McLaughlin, instructor Martin;; visiting assistant professors Bowers (Speech), Craswell (Classics), Curtis (Speech Pathology and Audiology), Dowsett (German), Fleck (Computer Science), German (Russian), Heterodim (Computer Science), Hollis (Speech Pathology and Audiology), O’Gorman (French and Italian), Raune (German), Santisi (Spanish and Portuguese).
105:142 German Phonology 3 cr. Structure of sound systems of German language; pronunciation to problems of German morphology and syntax; first linguistic course; same as German 11:205.

105:144 Structure of Modern German 3 cr. Same as East Asia Studies 10:112; no knowledge of Chinese required.

105:147 Linguistics of Contemporary Russian 3 cr. Same as Russian 11:221.

105:148 Development of Standard High German 3 cr. Development of standard High German language from medieval territorial dialects, 1150 to 1600; extensive readings in works representative of dialect area and on attempts to establish standard norm; same as German 13:449.

105:168 Linguistics Analysis 3 cr. Vituprastics and development of ordinary language philosophy; prerequisite: consent of instructor; same as Philosophy 26:162.

105:171 Language and Culture 3 cr. Women in communication; semiotics aspects; music, speech as event, communication networks, language classification, iconic communication; same as Anthropology 10:140; prerequisite: consent of instructor.

105:172 Introduction to Psycholinguistics 3 cr. Survey of contemporary approaches to language behavior; intended primarily for undergraduates; emphasis on background of phenomena noted; same as Speech Pathology and Audiology 21:17.


Courses Primary for Graduates 105:230 Phonetics in Linguistics 3 cr. Linguistic theory and analysis for beginning graduate students in linguistics and for graduate students in other disciplines in which more than passing familiarity with phonetics is of use; same as 26:230.


105:290 Linguistic Structures 3 cr. Analysis of grammatical analysis: phonological structure of selected language or variety of language (dialect); selected current work from year to year; may be repeated for credit if content differs; same as Speech Pathology and Audiology 10:290; prerequisite: consent of instructor.

105:301 Elements of Formal Linguistics 3 cr. Cursory introduction to generative grammar; same as 26:301.

105:304 Syntax: Analytic Generative Grammar 3 cr. Course to be offered in spring term; same as 26:303.


105:394 Dialectology 3 cr. Linguistic geography and comparative study of dialects; structural and generative approach to dialectology; phonological and social varieties in American English; prerequisite: 100-200 or equivalent.

105:397 Linguistic Typology 3 cr. Approach to classification of languages on basis of grammatical and phonological structure.

105:398 Experimental Psycholinguistics 3 cr. Critical review of research procedure and findings in psycholinguistics; topics include perception, memory and production; research project required; same as Speech Pathology and Audiology 10:281.

105:398 Field Methods in Ethnolinguistics 4 or 5 cr. Research methods in ethnolinguistics: emphasis on techniques of collecting field data, analysis and analysis of data, and research design; same as Anthropology 10:292; prerequisite: consent of instructor.

105:421 Language Theory 3 cr. Language theory.

105:423 Cultural and linguistic dimensions of human communication; same as Anthropology 11:223; prerequisite of linguistics.

105:331 History of the German Language 3 cr. Development of German language and dialects from prehistoric times to present; same as German 13:434.


105:340 Middle English Language and Literature 3 cr. Same as English 31:340.

105:345 Early Modern English Language and Literature 3 cr. Same as English 31:345.

105:350 Elementary Old English 3 cr. Structures of Old English, its historical position in Germanic group of languages, reading of select texts; same as English 31:350.

105:351 Old Norse 3 cr. Old Norse: its relations to other Scandinavian languages; selected readings from literature of period; same as German 13:350.

105:352 High German 3 cr. Grammar of High German literary language from earliest to fourteenth centuries; selected readings from literature of period; same as German 13:351.


105:354 Middle English 3 cr. Grammar of Middle English; literature of period; same as German 13:353.


105:356 Old English Grammar 3 cr. Grammar of Old English; classical literature in modern editions; same as German 13:356.

105:357 Old English Literature 3 cr. Grammar of Old English; classical literature in modern editions; same as German 13:357.

105:359 Comparative Germanic Languages 3 cr. Comparative approach to study of selected Germanic and related problems; topic varies each year; same as German 13:359.


105:380 Seminar: Ethnolinguistics 3 cr. Prerequisite: consent of instructor; may be repeated for credit.

105:381 Seminar: Language and Communication Research Language 3 cr.

105:382 Seminars in English Linguistics 3 cr. Topics in structure and history of English language; same as German 13:382.

105:383 Special Projects 1-6 cr. 105:450 Special Projects 1-6 cr.

105:400 Master's Thesis 0-18 cr.

Division of Mathematical Sciences

Degrees 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 mathematical sciences may plan studies which will lead to (and may include) advanced work in one or more departments of the Division. 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 interest 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, business 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:35 and 22M:36) 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 Languages
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:15-16 Introductory Mathematics for the Biological 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
22S:6 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 Equations
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:39-132
22S:152-154 Introduction to Mathematical Statistics I-II
22S:164-165 Introduction to 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:35-36) to the other, since the material is organized differently in the two sequences.

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 or her advisor and work out a program which reflects his or her mathematical interests. The requirements 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 mathematics, 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 requirement, should be taken in whatever area of mathematical sciences is of most interest to the student. Students contemplating employment 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
The student who wishes to enter the actuarial profession should be advised to take all of the courses in the mathematics sequence and to begin 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 completing 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.


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 22M:152-154 Introduction to Mathematical Statistics I-II or 22M:20 Probabilities 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 for teacher certification, see "College of Education." The following program is suggested for students having an interest in mathematics education:

- The sequence 22M:25-28 Calculus I, II, III and Linear Algebra
- 22M:50 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 (breadth preferred over depth):
  1. 22M:100-101 Advanced Calculus
  2. 22M:103-104 Foundations of Mathematics
  3. 22M:115-116 Introduction to Analysis and
  4. 22M:110-111 Elementary Topology

In addition, the student should take at least two courses of graduate work 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/I, 22M:153-154 Introduction to Mathematical Statistics and 22M: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: 22M:152-154 Introduction to Mathematical Statistics, 22M:164-165 Introduction to Probability, or 22M:39 Probability and Statistics for Engineering and Physical Sciences and 22M:312 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/I, 22C:18 Assembly Language Programming and one or two courses in mathematical analysis from 22M:55 Fundamental Concepts of Space and Functions, 22M:105 Analysis for Applications and 22M:115 Introduction to Analysis I. Further work in one of the biological, physical, or engineering sciences is also highly recommended.


Courses offered on a credit/no credit basis are allowed. The major should work with his advisor to select those courses that are most appropriate for his area of specialization. The student is responsible for determining which courses are suitable for his major, given his individual background and goals.
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 Computerizing 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:39 Discrete Structures (3 hrs.)
- 59:177 Switching Theory (3 hrs.)

Each undergraduate student must also complete 12 semester hours of courses in a field related to computer science with at least one course at the 300 level. Suggested fields are engineering, physics, mathematics, statistics, business administration, and economics. If mathematics is selected the courses must be in addition to those above as fulfillment of the core course requirements.

Other courses strongly recommended by the computer science faculty are:

- 50:10 Logic and Digital Systems
- 56:141 Operations Research
- 56:151 Graph Theory
- 59:177 Computation Theory
- 59:179 Probability and Statistics
- 22M:170 Numerical Methods

Applied Mathematical Science

Committee Chair: William F. Ames
Degree offered: B.S.

Applied mathematical science at Iowa is an autonomous, broad-based interdisciplinary program leading to the Doctor of Philosophy degree. The program seeks to help the student achieve a basic command of all-area mathematics, at least one science (behavioral, biological, engineering, physical or medical) and the methods of applied mathematics. Additionally, the program seeks to develop the "attitude" of an applied mathematical scientist by emphasizing the totality of the discipline.

Creative activities of an applied mathematical scientist include the formulation of scientific concepts and problems in mathematical terms; the solution of the resultant mathematical problems; 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 mathematical theories in areas which have not hitherto been suspected to have systematic mathematical treatment. These efforts may, in turn, lead to the generation of new mathematical ideas and theories, at the result of advances in fields of application.

Students applying for admission are expected to have an excellent 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 developed by incorporating the desired balance in the appropriate sciences, 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 committee, each student is expected to recognize a significant problem within his or her science. Thus he or she develops an appropriate mathematical model for that problem, critically examines that model with respect to its tractability and success in prediction, 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.

Fellowships, 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 $3,500 for the ninth-month academic year. Tuition is not included, but some tuition scholarships 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. Under 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 a fellowship stipend for uninterrupted study, private research 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 information about the academic program, write to the Chairperson of the Program in Applied Mathematical Science, Graduate College, The University of Iowa, Iowa City, Iowa 52240.

Computer Science

Department Chair: William F. Ames
Degree offered: B.A., M.A., Ph.D.

Computer science is a mathematically-based discipline concerned with algorithms and information. Since only the existence of the digital computer makes the study 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 informed 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 understanding of the capabilities and limitations 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 Sciences jointly with the Division of Mathematical Sciences, the M.S. and Ph.D. in computer science.

Undergraduate Program

See "Division of Mathematical Sciences"

Graduate Course Sequence

In many stipulates a prerequisite to advanced study and research is comprehension of the use of a digital computer. The faculty of the Department endorses the study of computer science by graduate students so as to gain the necessary proficiency in the use of a computer. However, the Department will 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 graduate 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 understanding of the capabilities of computers and experience in writing programs in two of the most widely used programming languages, Fortran and PL/I.

There will be many graduate students for whom the above sequence will not be sufficient because of their particular research needs. Depending upon those needs, such courses as 22C:18 Advanced Language Programming or 22C:21 Last Processors and Data Structures may be useful.

Graduate Program

Although the plan of study of each advanced graduate 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 computer theory. The specific requirements for the M.S. and Ph.D. degrees follow.

The M.S. graduate will find careers as programmers or system analysts in industry, business or government, as well as in directing and teaching computing 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 Admissions

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 student'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 pre-requisites.

Requirements

Upon admission, the chairperson 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 equivalent to that which can be gained as follows:

22C:122 Advanced Computer Organization 3 s.h.
22C:123 Programming Languages 3 s.h.
22C:139 Introduction to Computation Theory 3 s.h.
22C:191 Problems in Computer Science 1 s.h.
22C:192 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.


If a M.S. candidate may 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 minimum number of semester hours for the M.S. degree in computer 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 examinees may require an oral review of the comprehensive 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 in these exams is that typically taught in 22C:122 Advanced Computer Organization, 22C:123 Programming Languages and 22C:133 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 Department.

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 at least 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, programming 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 review, 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: Wegs, Toney; associate professors: Dolich, Fleck, Mushelophy; assistant professors: Baran, Towner, McClain, Alton; instructors: Efridans, Workman
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 a master’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 deficiency.

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 examination covers the material in these sequences and, in the case of prospective secondary school teachers, material in required education courses. The remainder of the student’s program may be chosen from any one or more of the departments in the Division and, if desired, from outside the Division as well.

Thus, the program seeks to provide master’s candidates with a common core of knowledge and, outside of this core, to allow maximum flexibility.

In addition to these programs, there is an M.S. program (see III below) designed for students seeking the Ph.D. in other disciplines which require a good deal of mathematical knowledge.

Program I (designed for secondary school teachers)

Required Courses

Two from 22M:151-116 Introduction to Analysis and 22M:210-211 Analysis, but including either 22M:116 or 22M:211
Two from 22M:120-121 Abstract Algebra and 22M:205-206 Introduction to Algebra, but 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 100 or above, except 22M:105 Analysis for Applications; Either
22C:122 Advanced Computer Organization, 22C:132 Programming Languages, 22C:135 Introduction to Computational Theory, 22C:145 Artificial Intelligence, 22C:199 Automata Theory I or any 200-level course in computer science; and either
22B:133-134 Introduction to Mathematical Science, 22B:164-165 Introduction to Probability, or any statistics course having any of these as a prerequisite

Comprehensive Examination

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
Two from 22M:120-121 Abstract Algebra I-II and 22M:205-206 Introduction to Algebra I-II, including either 22M:121 or 22M:206

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 100 and above except 22M:105
Any of the following courses in the Department of Computer Science:
22C:122 Advanced Computer Organization
22C:132 Programming Languages
22C:135 Introduction to Computational Theory
22C:145 Artificial Intelligence
22C:199 Automata Theory I or any 200-level course

Any of the following courses in the Department of Statistics:
22S:133-134 Introduction to Mathematical Statistics I-II
22S:164-165 Introduction to Probability I-II

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 Course**

**Note**

**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 examination 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 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 doctoral candidate is 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 chairman of the Department.

**23611 Basic Mathematical Techniques**

Students, freshmen, sophomores, juniors, seniors; also open to graduate students. 3 cr. (3 hrs. of lectures) Algebraic expressions and operations, simple products, linear and quadratic equations, simultaneous equations, exponential and logarithmic equations. Pre-requisite: one year high school algebra, one year high school geometry.

**23811 Mathematical Techniques I**

Logarithms, exponents, exponential and logarithmic functions, trigonometry, analytic geometry, complex numbers. Primarily intended for students who need
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Mathematics

were technical competence in these topics; prereq: 23M:1 or one and one-

half years high school algebra, one year high school geometry

23M:16 Mathematical Techniques II 3 s.h.
Salient features and obvious triangle identities of the plane; graphing inequalities;
distance in the plane, circles, lines, introduction to general linear programming;
brief introduction to derivatives, applications of derivatives; primarily for stu-
dents who need some technical competence in these topics; prereq: 23M:1 or
one year high school algebra, one year high school geometry

23M:16 Matric Algebra 3 s.h.
Elementary matrices of matrices and determinants, rank and nullity of ma-
trices, systems of linear equations, transformation in the plane, introduction to
eigenvalue theory; primarily for students who need some technical competence
in use of matrices; prereq: 23M:3 or three years high school mathematics

23M:17 Introduction to Mathematical Statistics 3 s.h.
Quantitative methods for teaching problems arising in biological, management,
and social sciences; computer programming, systems of linear equations, linear
programming, descriptive statistics, finite probability models, discrete random vari-
able; offered by EAS:18, prereq: two and one-half years high school mathemat-
ics or 23M:1

23M:18 Fundamentals of College Mathematics I 4 s.h.
Introduction for liberal arts students to some basic concepts of mathematics;
elementary set theory. Venn diagrams, logic using truth tables probability
permutations and combinations, conditional probability, independent trials; linear
equations, vectors and matrices; prereq: 23M:1 or 23M:16; may be used to satisfy four hours of Liberal Arts Core requirement in natural science

23M:19 Fundamentals of College Mathematics II 4 s.h.
Introduction to analysis of graphs and trigonometric functions; introduction to
limits of calculus, derivatives, integrals applications to social and physical science;
additional elementary topics in another theorem, geometry or physics, in three periods; this course or 23M:14 (but not both) may be used to satisfy four hours of core require-
ment in natural science; prerequisites 23M:12 or 23M:16

23M:20 Intermediate Algebra 5 s.h.
Elements, function, coordinate systems, graphing, polynomials, rational-ex-
ponential, logarithmic functions and relations; exponential and logarithmic,
elementary matrix operations; systems of equations; analytic geometry and
applications chosen from biological sciences; prerequisites two years high
school algebra, one year high school geometry or 23M:1

23M:21 Intermediate Algebra for the Biological Sciences 3 s.h.
Differential and integral calculus selected topics in differential equations, mul-
tivariate calculus, probability and statistics relevant to biological problems consid-
ered; prereq: 23M:12

23M:25 Elementary Functions 3 s.h.
Polynomial, rational, exponential and logarithmic functions, graphs of algebraic,
trigonometric, hyperbolic, exponential functions; inverse trigonometric functions;
rectangular, polar, cylindrical, spherical coordinates; sequences, inequalities, lim-
its; offered in computer science and economics; prereq: two years high school algebra
or 23M:12; not intended for students who have had high school calculus

23M:26 Calculus I 3 s.h.
Fundamental methods, techniques of integration and rules of differentiation and
integral calculus; prereq: three and one-half years high school mathematics
including trigonometry; one year high school geometry or 23M:12

23M:27 Calculus II 4 s.h.
Continuation of 23M:26; prereq: 23M:26

23M:27 Introduction to Linear Algebra 3 s.h.
Introduction to linear algebra including vector spaces, linear transformations,
linear dependence, independence, rank, nullity, determinants, eigenvalues and
eigenvectors; matrix operations; theory and applications; offered in computer
science; prereq: one year calculus

23M:28 Fundamental concepts, methods, and techniques of multivariate calculus;
introduction to linear algebra; calculus of several variables, vector calculus; useful
for graduate study in the physical sciences, engineering, and economics; one year
mathematics; prereq: 23M:12

23M:29 Computational Techniques of Calculus and Linear Algebra

23M:30 Engineering Mathematics I 3 s.h.
Use of computer aid to understanding concepts and techniques of calculus and
linear algebra; only one of each course considered satisfied 23M:25, 26, 27, or
29 up to four hours credit may be acquired; one credit hour for each four hours of
course

23M:35 Engineering Mathematics II 3 s.h.
Real line, functions of a single variable, calculus, vectors, vectors and
vector products, lines and planes, derivatives, ease of change, maxima and
minima of functions of several variables, linear vector spaces, curves, planes, point con-
rates, parametric curves: inverse functions, volumes, length, area, work; pre-
requisites: high school algebra and trigonometry

23M:36 Engineering Mathematics III 4 s.h.
Continuation of 23M:35; partial differentiation with applications; further work in
integration, numerical methods, the gradient, differentiation of vector; curve inter-
sect; improper integrals, vector velocity and acceleration; elements of linear alge-
bra, matrices, determinants, elements of differential equations; indi-
vidual section prerequisites: 23M:25

23M:37 Engineering Mathematics IV 3 s.h.
Continuation of 23M:36; further study of vector operators, vector identities,
Solv's and Euler's theorems; ordinary differential equations, systems of linear
equations; Laplace transforms and series solutions; continuation of linear algebra;
Taylor's formula and series; prerequisites: 23M:36

23M:38 Engineering Mathematics V 3 s.h.
Continuation of 23M:37; multiple integration; fourier transforms; systems of linear
equations; ordinary differential equations; Laplace transformation; solutions and
series solutions; special functions; partial differential equations; theorems on
limits and continuity; prerequisites: 23M:36

23M:39 Fundamentals of Properties and Spaces Functions 3 s.h.
Elementary topological and analytic properties of Euclidean metric space; sup-
inf and arbitrary products; development of Lebesgue's theory of integration; se-
mets and measures; prerequisites: 23M:26

23M:40 Euclidean Plane Geometry 3 s.h.
Axiomatic construction of fundamentals of Euclidean plane geometry; prerequisites:
23M:26 or equivalent

23M:50 Theory of Arithmetic 3 s.h.
Exhaustive study of fundamentals of elementary number theory; structure of
real number system; prerequisites: 23M:26 or equivalent; same as TE:124

Undergraduate Courses: Upper Division

23M:100 Differential Equations 3 s.h.
Linear differential equations; First order existence theorems; Norm-Lipschitz problems;
boundary value problems; prerequisites: 23M:28 or 23M:29

23M:101 Foundations of Mathematics I 3 s.h.
Infinite set theory, construction of real number system, Calculus I, Zorn's lemma, axiom
of choice and well ordering theorem; prerequisites: 23M:28 or

23M:102 Foundations of Mathematics II 3 s.h.
Infinite set theory; construction of Reals and Borel Algebras; prerequisites:
23M:28 or 23M:29

23M:140 Analysis for Applications 3 s.h.
Continuity, uniform convergence, power series, implicit and inverse function the-
orems, differentiation, Riemann integral; prerequisites: 23M:28 or 23M:29

23M:151 Introduction to Topological Spaces 3 s.h.
Introduction to topological spaces and metric spaces, open and closed sets, ac-
countability and separability; prerequisites: properties of one- and two-dimensional measurable field-probability on well defined
functions, topological spaces, curves, Cantor Sets, prerequisites: one year calculus

23M:152 Elementary Topology 3 s.h.
Introduction to topics in point-set topology chosen as instructor's choice; prere-qusites: 23M:28 or 23M:29

23M:153 Introduction to Analysis 3 s.h.
Sequences, convergence, sequences and set of real numbers, limits, metric spaces,
uniform convergence, continuous functions, completness, completeness; prerequisites:
23M:28 or 23M:38 or 23M:39 or graduation standing

23M:160 Linear Algebra I 3 s.h.
Riemann integral, fundamental theorems of calculus, d---q---q-----q-----q
functions, Taylor series, sequences and series of functions, uniform convergence, Point-line
theorem, existence of solutions to differential equations, implicit function theorem; prerequisites: 23M:28 or 23M:29

23M:161 Complex Variables 3 s.h.
Operations on polynomials, geometry of complex plane, basic functions, Cauchy-Gours-
tay theory and applications; Laurent series, residues, elementary conformal maps;
prerequisites: 23M:100 or 23M:113

23M:180 Abstract Algebra I 3 s.h.
Rings and linear algebras; groups with operators, coset decompositions, regular
polynomials, rings with chain conditions, unique factorization, rings rings, similarity of
matrices, determinants and coset forms; prerequisites: 23M:20
### Statistics

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 advisor, will be substituted in the degree program.**

#### Theoretical Statistics and Probability

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>22M:112</td>
<td>Introduction to Analysis I</td>
</tr>
<tr>
<td>22S:153-154</td>
<td>Introduction to Mathematical Statistics I-II</td>
</tr>
<tr>
<td>22S:164-165</td>
<td>Introduction to Probability I-II and at least six semester hours from among:</td>
</tr>
<tr>
<td>22M:116</td>
<td>Introduction to Analysis II</td>
</tr>
<tr>
<td>22M:210-211</td>
<td>Analysis I-II</td>
</tr>
<tr>
<td>22S:160</td>
<td>Applied Statistical Decision Theory</td>
</tr>
<tr>
<td>22S:167-168</td>
<td>Introduction to Stochastic Processes I-II</td>
</tr>
<tr>
<td>22S:170</td>
<td>Introduction to Nonparametric Statistics</td>
</tr>
<tr>
<td>22S:172</td>
<td>Topics in Statistical Methodology</td>
</tr>
<tr>
<td>22S:253</td>
<td>Theory of Statistics</td>
</tr>
<tr>
<td>22S:254</td>
<td>Theory of Probability</td>
</tr>
<tr>
<td>22S:256</td>
<td>Multivariate Analysis</td>
</tr>
<tr>
<td>22S:271-272</td>
<td>Statistical Inference I-II</td>
</tr>
</tbody>
</table>

#### Applied Statistics

The following courses are recommended and constitute the core of the program:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>22S:103</td>
<td>Introduction to the Design of Surveys</td>
</tr>
<tr>
<td>22S:153-154</td>
<td>Introduction to Mathematical Statistics I-II</td>
</tr>
</tbody>
</table>

### Design and Analysis of Experiments

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>22S:158</td>
<td>Design and Analysis of Experiments</td>
</tr>
<tr>
<td>22S:162</td>
<td>Regression Analysis</td>
</tr>
<tr>
<td>22S:173</td>
<td>Statistical Computation and Computation</td>
</tr>
<tr>
<td>22S:100</td>
<td>Introduction to Computing with Fortran</td>
</tr>
</tbody>
</table>

### Statistical Methods in Educational Research

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>22S:127-128</td>
<td>Statistical Methods in Educational Research I-II</td>
</tr>
</tbody>
</table>

### Quality Control and Reliability

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>22S:133</td>
<td>Quality Control and Reliability</td>
</tr>
</tbody>
</table>

### Advanced Statistical Methods

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>22S:148</td>
<td>Advanced Statistical Methods</td>
</tr>
<tr>
<td>22S:160</td>
<td>Applied Statistical Decision Theory</td>
</tr>
<tr>
<td>22S:161</td>
<td>Application of Multivariate Statistical Theory</td>
</tr>
<tr>
<td>22S:164</td>
<td>Introduction to Probability I</td>
</tr>
<tr>
<td>22S:170</td>
<td>Introduction to Nonparametric Statistics</td>
</tr>
<tr>
<td>22S:170</td>
<td>Numerical Methods</td>
</tr>
<tr>
<td>56:143</td>
<td>Digital Signal Processing I</td>
</tr>
<tr>
<td>56:241</td>
<td>Digital Signal Processing II</td>
</tr>
</tbody>
</table>

### Design and Analysis of Experiments

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>22S:181-182</td>
<td>Actuarial Theory and Practice I-II</td>
</tr>
<tr>
<td>22S:183</td>
<td>Construction of Demographic Tables</td>
</tr>
<tr>
<td>22S:184</td>
<td>Risk Theory</td>
</tr>
<tr>
<td>22S:297</td>
<td>Seminar: Actuarial Theory</td>
</tr>
</tbody>
</table>

At least one course from outside Division of Mathematical Sciences must be selected. Courses outside of the Department are recommended.

### Operations Research

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>22S:133-154</td>
<td>Introduction to Mathematical Statistics I-II</td>
</tr>
<tr>
<td>22S:177</td>
<td>Numerical Analysis for Actuaries</td>
</tr>
<tr>
<td>22S:178</td>
<td>Graduation</td>
</tr>
<tr>
<td>22S:179</td>
<td>Advanced Mathematics for Finance</td>
</tr>
<tr>
<td>22S:180</td>
<td>Mathematics of Life Insurance</td>
</tr>
<tr>
<td>22S:181-182</td>
<td>Actuarial Theory and Practice I-II</td>
</tr>
<tr>
<td>22S:183</td>
<td>Construction of Demographic Tables</td>
</tr>
<tr>
<td>22S:184</td>
<td>Risk Theory</td>
</tr>
<tr>
<td>22S:297</td>
<td>Seminar: Actuarial Theory</td>
</tr>
</tbody>
</table>

### Mathematical Statistics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>22S:133-154</td>
<td>Introduction to Mathematical Statistics I-II</td>
</tr>
<tr>
<td>22S:140</td>
<td>Applied Statistical Design Theory</td>
</tr>
<tr>
<td>56:241</td>
<td>Operations Research</td>
</tr>
<tr>
<td>56:242</td>
<td>Mathematical Programming I</td>
</tr>
<tr>
<td>56:243</td>
<td>Mathematical Programming II</td>
</tr>
</tbody>
</table>

### Applications to Finance and Actuarial Science

The M.S. degree may be awarded 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 should 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 areas of specialization to other fields of knowledge, to acquire 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 technical contracts with foreign scientists. 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 18 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 ascertain 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 I-II
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 I (a) applied statistics (three hours) which basically covers the material in 228:158 Design and Analysis and 228:235 Analysis of Variance, 228:256 Mathematical Statistics I, 228:257 Mathematical analysis (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 (b). This preliminary examination must be offered once in the fall semester and once in the spring semester. It is subject to the approval of the Department that the student be passed, passed with reservation 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 advisor, he or she and the advisor should prepare a plan of study. The student then seeks permission of the Department chairman 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 chairmen 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 MacLean Hall and are employed in Quantitative Methods and several other courses to give students experience using the computer.

Because statistics 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.

Staff: Professors Bloemers, Feldt, Hickman, Hogg, Knowler, Lebow, Lamberg, Mardia, Storer, and Thomas; Associate Professors Birch, Cryer, Norton, Ramberg, Robertson, Woodworth, Wright; Assistant Professors Broffito, Cole, Dini, Hoover, Randies

Courses Primarily for Undergraduates

Note: No student who has received credit for a course offered by the Department of Statistics above 228:100 may receive credit for subsequently taking a course numbered below 228:100.

228:304 Quantitative Methods I 4 s.h.
228:305 Elementary Probability and Statistics 3 s.h.
228:306 Introduction to Statistical Methods using SAS and MINITAB 2 s.h.
228:308 Regression and Correlation Analysis 3 s.h.
228:309 Probability and Statistics for Engineering and Physical Sciences 3 s.h.

Statistics

Prereq. three years of high school mathematics, 12 units, 3 in algebra, 2 in plane geometry, 5 in trigonometry.

228:102 Introduction to Statistical Methods 3 s.h.

Note: No student who has received credit for a course offered by the Department of Statistics above 228:100 may receive credit for subsequently taking a course numbered below 228:100.
Courses for Undergraduates and Graduates

225:101 Biostatistics 3 or 5 hrs. Elementary course on statistical methods primarily for research in medical subjects and related fields; same as Preventive Medicine and Environmental Health 63:101.


225:103 Probability and Statistics 4 hrs. Finite and general probability models, random variables, functions of random variables, expectation, variance, discrete and continuous distributions, estimation and hypothesis testing.


225:192 Engineering Statistics 3 or 4 hrs. Same as Industrial and Management Engineering 56:112; prerequisite 225:39 or equivalent.

225:193 Quality Control and Reliability 3 hrs. Same as Industrial and Management Engineering 56:133; prerequisite 225:32.

225:224 Advanced Statistical Methods 4 hrs. Same as Education 75:43; prerequisite: 225:24 or equivalent.


225:253 Introduction to Mathematical Statistics II 4 or 5 hrs. Continuation of 225:25; point estimation, statistical hypothesis, analysis of variance, further normal distribution theory.


225:279 Design of Experiments 3 or 4 hrs. Same as Education 75:36; prerequisite 225:14; offered for three semesters from once in summer to another.

225:91 Applied Statistical Decision Theory 3 hrs. Same as Industrial and Management Engineering 56:333; prerequisite 225:120 or 225:121.


225:142 Introduction to Biostatistical Computing 3 hrs. Average probability models, conditional probability and independence, random variables, normal distribution and special distribution complications; prerequisite: Mathematics 120:115.


225:126 Operations Research 3 hrs. Winter, Primo and normal processes, generalizations of the Poisson process, renewal processes and ordinary processes, applications adopted from physical, biological, and management science; prerequisite 225:151.

225:946 Introduction to Reliability Engineering 3 hrs. Continuation of 225:14: Markov chains, both discrete and continuous parameters, with references in branching processes, random walks, ruin problems, birth and death processes, queuing and traffic models.


225:171 Introduction to Stochastic Processes 3 hrs. Problems selected by instructor for topics in probability and statistics will be applied to building models in science, making scientific decisions and management decisions; prerequisite: 225:154:190, 225:154 or 225:153.

225:173 Statistical Consulting and Consulting 4 or 5 hrs. Business examples for two semester hours study of data computer programs for analyzing data and performing statistical analysis and testing procedures; students required for two semester hours must carry out consulting projects involving statistical problems arising in research projects carried on by University students and faculty members; consulting aspect of course (two semester hours) may be optional; prerequisite: consent of instructor.

225:177 Numerical Analysis for Actuaries 3 hrs. Introduction to analysis in finite dimensional, essential differentiation, integration, and solution of nonlinear equations; prerequisites: Mathematics 224:16 or 224:36.


225:190 Mathematical Life Insurance 3 hrs. Exercises from probability and mathematics of finance applied to problems of price-benefit studies determination in life insurance, prerequisite: Mathematics 224:18 or 224:36.


225:194 Risk Theory 3 hrs. Individual and collective risk models for insurance systems; concepts of approximating the distribution of a random number of risk models to management of an insurance system; prerequisite or composites: 225:153 and 225:161.

225:195 Topics in Actuarial Sciences 3 hrs. Using topics selected by instructor for reference; basic laws in probability, math, and other applied to specific problems that arise; instructor announces prerequisites or composites: 225:181.


Prerequisites: consent of Department

Courses for Graduates


225:485 Advanced Topics in Statistics 3 hrs. Multivariate theorems and theorems on matrix theory, may be repeated for permission; offered for two semester hours only in summer term; prerequisite preliminary knowledge of algebra of matrices and 225:114 or equivalent.


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 Degree 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 of M.T. (A.S.C.P.) —Medical Technologist (American Society of Clinical Pathologists).

Preclicktive Studies

In the prescriptive 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 16 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 embryology.

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 prescriptive 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-hour credits, thus completing the college requirement for the Bachelor of Science in Arts degree in general science.

The clinical program covers 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 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.
Courses

See “General Science” for description

Microbiology

Department Head: J. E. Porter

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, geomicrobiology—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, hospitals, 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 correspondingly higher salaries.

The Bachelor of Science Degree

An undergraduate student majoring in microbiology at Ithaca College meets all 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. A senior language requirement is also demanded.

Required courses for the microbiology major include:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>2:1 Introduction to Botany</td>
<td>3 s.h.</td>
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<tr>
<td>or</td>
<td></td>
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<tr>
<td>37:3 Principles of Animal Biology</td>
<td>5 s.h.</td>
</tr>
<tr>
<td>41:1 and 4:4 Principles of Chemistry I-II</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>4:5 Principles of Chemistry</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>4:6 Elementary Chemistry Laboratory</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>4:11 Quantitative Analysis</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>4:121-122 Organic Chemistry I-II</td>
<td>6 s.h.</td>
</tr>
</tbody>
</table>

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. Schrimper

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, geological and zoological students. Instruction is designed to meet the individual needs of each of these students. Advanced science 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 Schrimper

Courses

(All registration by consent of instructor)

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>24:17 Museum Techniques</td>
<td>1 or 2 s.h.</td>
</tr>
</tbody>
</table>

Collecting, preparing and exhibiting biological materials for museums, classroom teaching or repair work.
Music

School Director: Humie Yanman


Music is a true art form and one of the most powerful and influential activities of human civilization. The University of Iowa School of Music has long been recognized as one of the foremost universities in the United States.

There are two main campuses of the University of Iowa School of Music and it is one of the leading music schools in the United States. The school offers undergraduate and graduate programs in music education, music history, and performance.

Undergraduate Degrees

New undergraduate students planning to major in music are encouraged 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 Degrees"): The curriculum for the undergraduate degrees is identical, except that candidates for the B.M. degree must complete at least 50 semester hours in music toward graduation in the College of Liberal Arts, while candidates for the B.M. degree must complete at least 50 semester hours in music toward graduation in the College of Liberal Arts. In addition, candidates for the B.M. degree must complete at least 50 semester hours in music toward graduation in the College of Liberal Arts and in addition, candidates for the B.M. degree must complete at least 50 semester hours in music toward graduation in the College of Liberal Arts. In addition, candidates for the B.M. degree must complete at least 50 semester hours in music toward graduation in the College of Liberal Arts.

Candidates for the B.M. degree must complete the following music requirements:

- 25:1-2 Literature and Theory I, II
- 25:3-4 Ear Training and Sight Singing
- 25:6-6 Literature and Theory III, IV
- 25:7-8 Advanced Ear Training and Sight Singing

Four-year plan: Applied music (both solo and ensemble)

Participation in band, orchestra or chorus required of all undergraduates; specific assignments at discretion of advisor and director of School of Music. A minimum of 24 semester hours in music is required for students majoring in music education.

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, B.A. or B.M. requirements in music, liberal arts and education, certification to teach music in Iowa schools requires satisfactory completion of:

- 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.
- 25:111 Principles of Embellished Theory and Design 1 or 2 s.h.
- 25:112 Principles of Embellished Theory and Design 1 or 2 s.h.
- 25:125 Basic Music Theory 1 or 2 s.h.
- 25:126 Basic Music Theory 1 or 2 s.h.
- 25:135 Basic Music Theory 1 or 2 s.h.
- 25:145-152 Basic Music Theory 1 or 2 s.h.
- 25:155 Basic Music Theory 1 or 2 s.h.
- 25:157 Basic Music Theory 1 or 2 s.h.
- 25:177 Basic Music Theory 1 or 2 s.h.
- 25:179 Basic Music Theory 1 or 2 s.h.

Minimum of one year on secondary string instrument required; violin and viola majors elect one year of cello instruction; cello

Additional Electives in Advanced Music Theory, Composition, and Performance

- 25:201 Advanced Music Theory I 1 or 2 s.h.
- 25:202 Advanced Music Theory II 1 or 2 s.h.
- 25:203 Advanced Music Theory III 1 or 2 s.h.
- 25:204 Advanced Music Theory IV 1 or 2 s.h.
- 25:205 Advanced Music Theory V 1 or 2 s.h.
- 25:206 Advanced Music Theory VI 1 or 2 s.h.
- 25:207 Advanced Music Theory VII 1 or 2 s.h.
- 25:208 Advanced Music Theory VIII 1 or 2 s.h.
- 25:209 Advanced Music Theory IX 1 or 2 s.h.
- 25:210 Advanced Music Theory X 1 or 2 s.h.
- 25:211 Advanced Music Theory XI 1 or 2 s.h.
- 25:212 Advanced Music Theory XII 1 or 2 s.h.
- 25:213 Advanced Music Theory XIII 1 or 2 s.h.
- 25:214 Advanced Music Theory XIV 1 or 2 s.h.
- 25:215 Advanced Music Theory XV 1 or 2 s.h.
- 25:216 Advanced Music Theory XVI 1 or 2 s.h.
- 25:217 Advanced Music Theory XVII 1 or 2 s.h.
- 25:218 Advanced Music Theory XVIII 1 or 2 s.h.
- 25:219 Advanced Music Theory XIX 1 or 2 s.h.
- 25:220 Advanced Music Theory XX 1 or 2 s.h.
- 25:221 Advanced Music Theory XXI 1 or 2 s.h.
and bass majors elect one year of violin; in addition, all violin majors are expected to elect one semester of Class Viola.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>25:107</td>
<td>Instrumental Conducting</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>25:112</td>
<td>String Techniques and Methods</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

**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.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>25:109</td>
<td>Choral Methods and Conducting</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>25:110</td>
<td>Choral Literature and Conducting</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

**Music Teaching Minor for Elementary Education Majors**

Minimum of 24 semester hours required in this program.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>7E:119</td>
<td>Methods: Basic Skills and Techniques in Music Education</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>7E:120</td>
<td>Methods and Materials: Music for the Classroom Teacher (section for music minors)</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>7E:192</td>
<td>Laboratory Practice in Elementary School</td>
<td>2 s.h.</td>
</tr>
<tr>
<td></td>
<td>Applied Music</td>
<td>2 s.h.</td>
</tr>
<tr>
<td></td>
<td>Participation in Music Ensembles</td>
<td>2 s.h.</td>
</tr>
</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 advisor.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>25:115</td>
<td>Diction for Singers I</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>25:116</td>
<td>Diction for Singers II</td>
<td>2 s.h.</td>
</tr>
</tbody>
</table>

**Piano Majors-Non Vocal Area**

Piano majors who elect to teach in nonvocal area must complete requirements in either brass, woodwind, and percussion or string area.

**Methods and Materials: Student Teaching Vocal Majors**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>7E:145</td>
<td>Methods and Materials: Elementary School Music</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>7E:142</td>
<td>Methods and Materials: Secondary School General Music</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

**Instrumental Majors**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>7E:145</td>
<td>Methods and Materials: Elementary School Music</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>7E:140</td>
<td>Methods and Materials: Secondary School Instrumental Music</td>
<td>4 s.h.</td>
</tr>
</tbody>
</table>

**All Majors**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>7E:191</td>
<td>Observation and Laboratory Practice in High School</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>7E:192</td>
<td>Laboratory Practice in Elementary School</td>
<td>6 s.h.</td>
</tr>
</tbody>
</table>

(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, forms and counterpoint), which are given on the weekend of 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 archaeology, 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 the usual maximum amount of credit, or may be in the fields of performance, composition or instrumentation. For the thesis in performance (four semester hours minimum 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 theses.

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 deficiency revealed in advisory examinations in music theory and ear training are remedied through 25:111 Review Theory:

25:145 Counterpoint of 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 required 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.
25:301–202 Advanced History and Literature of Music I–II or equivalent or satisfactory score on Advisory Examination. If excused from either or both 25:301–302 as result of Advisory Examination, another course should be elected from music history sequence, 25:303 to 25:319, courses 25:322 and 25:330 to 25:332; others occasionally offered by musicology staff may be elected in special cases with permission of musicology adviser.


Keyboard majors may substitute accompaniment in place of participation in large ensemble at discretion of their adviser.

Suitable courses in 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 75:240 Supervision and Administration of Music, 75:441 Psychology of Teaching Music, 7E:245 General Music in the Elementary School or 75:341 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 that 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 Degrees")
- 25:179 Acoustics or equivalent
- Reading proficiency in one foreign language (usually German) except for music education students, who may elect two courses in Italian; most areas require one or more additional languages; for these further language requirements and levels of achievement expected, students should consult appropriate adviser; it is recommended that entering students register for a language continuously, unless or until they pass required proficiency examination.

Doctor of Philosophy

Areas of concentration for this degree include composition, music history and musicology, music pedagogy, music theory and organ literature, etc. It is expected that original compositions shall be tested by audition before being submitted as theses.

Admission to the Ph.D. program in music theory includes the following requirements: satisfactory achievement on the advisory examinations 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
Music

include, in addition to the requirements for the M.A., in this field, two semester hours credit in both 78-444 and 78-445, 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 P.H.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 examination. 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 their first semester in residence. Conductors shall provide evidence of previous successful professional experience and be auditions 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. Advanced work, with full approval, those with an elementary background in music may register for 25:1—2 Fundamentals and Harmony I—II, 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 Choral/Orchestra performs the classical repertoire and the contemporary scores of student composers, accompanies student-performed concerts and some operatic productions and serves the practical needs of aspiring conductors.

College Musicians (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 of Campus 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 the opportunity to gain extensive experience in all facets of percussion performance.

The University Choral, 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. The Cen-
ter's basic purpose is to encourage talented young artists to develop their creative skills through multimedia and inter-media classes, projects and performances.

Facilities

With completion of the new Music Building (1970) and adjoining Hanchar Auditorium (1972), the University of Iowa Center 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 organs and a 725-seat recital hall. Hanchar Auditorium seats 2,600 persons for concerts, 2,400 for opera and other stage productions.

Library resources include among the most volumes of music and books—increased at the rate of approximately 2,000 a year—and more than 1,200 reels of microfilm, a microcard file of approximately 330 titles nearly 3,000 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 microreader 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 3.0 h.
Hearing, writing and ear training. Fundamentals of music and fundamentals of harmony; must be accompanied by registration in 253; first semester

282 Literature and Theory II 3.0 h.
Compositions of 251; must be accompanied by registration in 254-2; second semester

281S Literature and Theory III 2.0 h.
Two laboratory periods per week; first semester

282S Ear Training and Sight Singing 2.0 h.
Compositions of 253; second semester

283S Literature and Theory IV 3.0 h.
Harmony, counterpoint and formal practice from the seventeenth century to present; must be accompanied by registration in 252, 254; first semester

283S Literature and Theory V 3.0 h.
Compositions of 253; second semester

287 Advanced Ear Training and Sight Singing 1.0 h.
Two laboratory periods per week; both semesters

288S Advanced Ear Training and Sight Singing 1.0 h.
Compositions of 257; second semester

2811 Review Theory or arr.
Non-music majors; both semesters and summer

2815 Undergraduate Composition or arr.
Prerequisite: permission of instructor; both semesters

History and Research

2851 History of Music 3.0 h.
Prerequisite: music majors 253 or equivalent; nonmusic, consent of instructor; first semester

2852 History of Music II 3.0 h.
Compositions of 253, but may be taken as independent study; prerequisite same as above; second semester

2874 Moments in Music 1.0 to 4.0 h.
May be repeated for credit

Courses for Undergraduates and Graduates

Music Education

Where dual numbers are listed, subjects preparing for a Music Teacher Certification should register under Education number.

281/100 Class Voice 1.0 h.
Open to voice majors for secondary study only; to others by permission

281/101 Class Piano 1.0 h.
Open only to music majors for secondary piano only

281/102 Class Piano II 0.5 to 3.0 h.
Open only to piano majors for secondary piano study

281/105 Instrumental Techniques (Cornet, Clarinet, Percussion) 0.5 or 2.0 h.
Second semester

281/106 Instrumental Techniques 1.0 to 2.0 h.
Same as Education 751/43, for prospective teachers in public schools; fundamental instrumental skills; first semester

281/106S Instrumental Techniques 1.0 to 2.0 h.
Same as Education 751/44, for prospective teachers in public schools; fundamental instrumental skills; second semester

281/107S Instrumental Conducting 2.0 h.
Offered both semesters

281/109 Advanced Instrumental Conducting 2.0 or 3.0 h.
Offered both semesters

281/109S Piano Conducting and Methods 2.0 or 3.0 h.
Same as Education 751/41, first semester

281/199 Choir Methods and Conducting 2.0 or 3.0 h.
Same as Education 751/44, second semester

281/190 Choral Literature and Conducting 2.0 or 3.0 h.
Same as Education 751/44; registration as 259, second semester

281/111S Choir Conducting 2.0 or 3.0 h.
Same as Education 259/10, second semester

281/112S Method of Teaching Piano 2.0 or 3.0 h.
Same as Education 851/41

281/114S Method of Teaching Laboratory 2.0 or 3.0 h.
Same as Education 851/41

281/115S Method of Teaching Singers I 2.0 or 3.0 h.
Same as Education 851/41

281/115S Method of Teaching Singers II 2.0 or 3.0 h.
Same as Education 851/41

281/117S Problem in Arranging and Orchestration 2.0 or 3.0 h.
Same as Education 851/41

281/116S Arranging for Marching Band 2.0 or 3.0 h.
Same as Education 851/41

281/123S Ear Training. Procedures, Materials. Methods, Performance Practices 1.0 or 2.0 h.
Prerequisite: consent of instructor; contemporary perspective; literature and current style; notation, techniques or performance and composition

Therapy and Composition

281/148S Conceptual and Percussive Piano 3.0 h.
Prerequisite: piano majors 253 or 252 or equivalent

281/146 20th-Century Harmony and Counterpoint 3.0 h.
Lectures and accompanying compositions; 252 or 251 or equivalent; second semester

281/147S Tonal Form 2.0 or 3.0 h.
Prerequisite: 252 or 251 or equivalent; both semesters and summer

281/148 Analysis of Music Literature, 1600 to 1790 3.0 h.
Prerequisite: 251 or 252 or 253 or equivalent; may be repeated, first semester

281/149 Analysis of Music Literature, 1750 to 1855 3.0 h.
Prerequisite: 251 or 252 or 253 or equivalent; may be repeated; first semester
Nuclear Medical Technology

In this program student's mean-doll of performance for the academic major as required for the class of 1960 was presented. Course consists of one 1/2 hour lesson or two hours of class (quarterly weekly) at option of instructor.

50:17 Voice 0 to 1 h.w.
50:18 Piano 0 to 1 h.w.
50:19 Organ 0 to 1 h.w.
50:20 Radio of radio-television and radio-murder science.
50:21 Violin 0 to 1 h.w.
50:22 Voice 0 to 1 h.w.
50:23 Cello 0 to 1 h.w.
50:24 String Bass 0 to 1 h.w.
50:25 Woodwind 0 to 1 h.w.
50:26 Drum 0 to 1 h.w.
50:27 Percussion 0 to 1 h.w.
50:116 Wood 1 h.w.
50:120 Flute 1 h.w.
50:121 Oboe 1 h.w.
50:122 Clarinet 1 h.w.
50:123 Violin 1 h.w.
50:124 Viola 1 h.w.
50:125 Cello 1 h.w.
50:126 String Bass 1 h.w.
50:127 Woodwind 1 h.w.
50:128 Brass 1 h.w.
50:129 Percussion 1 h.w.

Ensemble
No separate list is given, but students may be selected for credit. Offered each semester.

50:176 The Continental Singers 1 h.w.
50:184 Belc Rians 0 or 1 h.w.
50:185 Opera Workshop 0 or 1 h.w.
50:186 Chamber Ensemble 0 or 1 h.w.
50:187 Collegium Musicum 0 or 1 h.w.

Audition before opportunity is desirable.

50:192 University Choir 1 h.w.
50:202 Piano Accompaniment 0 or 1 h.w.
50:207 Piano Chamber Music 0 or 1 h.w.
50:208 String Chamber Music 0 or 1 h.w.
50:209 Woodwind Chamber Music 0 or 1 h.w.
50:210 Brass Chamber Music 0 or 1 h.w.
50:211 Orchestra Choral 0 or 1 h.w.
50:212 Choir 0 or 1 h.w.
50:232 Handbell Ensemble 0 or 1 h.w.
50:235 Percussion Ensemble 0 or 1 h.w.
50:237 Jazz Workshop 0 or 1 h.w.

prerequisite consent of Instructor

Summer Instruction
Children may enroll for applied music courses during eight-week summer sessions for total fee of $25.00 for one half-hour lesson weekly or $50.00 for two lessons.

Courses
See "General Science" for description

Neurobiology
See "College of Medicine"
Practical Program
The required course of study emphasize the physical and biological sciences, which provide a basic background and which are prerequisites for the subjects and activities in the clinical year. In addition to these science courses, the prospective student must fulfill 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 medicine technology program:

- Proficiency in rhetoric, physical education and foreign language.
- Satisfaction of core requirement in the literature, social science and historical-cultural area.
- Completion of the minimum 36 semester hour requirements with either a combination of 12-16 eight semester hours in physics, chemistry or zoology, respectively; or a combination of 20-eight semester hours in physics, chemistry or zoology, respectively; and
- A minimum of 4 semester hours in mathematics.

A minimum of 16 semester hours must be completed prior to entrance into the 12-month clinical year with a 20 minimum cumulative grade-point average for all preclinical courses of study.

Clinical Program
The clinical year of study is carried out in the Veterans Administration and University medical facilities. In terms of time allocations, equal emphasis is given to both didactic and clinical experiences. The didactic portion covers in depth the clinical or technical specialties of physics of nuclear medicine, basic instrumentation, scanning instrumentation, radiation chemistry, physics, principles of radiation safety, radiography, radiological physics, principles of diagnostic testing, dosimetry, fundamentals of medical imaging, clinical chemistry, kinesio studies and medical ethics.

Rotations are established in the following areas within the departments of Nuclear Medicine at both medical facilities: In vivo radioisotope procedures, clinical radiopharmaceutical laboratory, trauma and research application, thyroid function studies, rectilinear and camera scanning, and in vivo kinetic studies.

Orientation on interrelationships with related hospital functions and facilities are provided by brief rotations in radiation therapy, radiologic technology, radiation protection and several clinical laboratory facilities.

Admission
Prospective students in nuclear medicine technology are encouraged to apply for study and to provide a transcript of previous work as early as possible in the preclinical program, since the class size is limited to six students, and prerequisites are increasingly important. Successful applicants for the clinical training program are notified of their selection at least three months before the beginning of the next clinical class. At present, the 12-month clinical training program starts in September of each year.

Staff: Professor Peterson, Associate Professor Chang, Assistant Professor Chang, Instructor and student advisor. Clinical: Nuclear Medicine Technologists.

Nuclear Science and Technology
Committee Chairmen James G. Calabone
Degree Offered: M.S.

Nuclear Science and Technology is an interdepartmental program offered through the cooperation of the Graduate College; the College of Engineering; the department of Mathematics, Chemistry and Physics in the College of Liberal Arts; and the Radiation Research Laboratory of the College of Medicine.

The program provides a background in the sciences on which nuclear technology is based. It is for students who are interested in applying nuclear processes to scientific and engineering problems, such as the production of electrical power, the application of radionuclides, and the use of radiation devices.

The program is administered by an interdisciplinary committee. The chairman of this committee is the advisor to students who enter the program. He or she should be consulted for advice concerning the program and for help in choosing a director for the student's M.S. program.

The following courses are prerequisites for the nuclear science and technology program, and must be taken before entering the program or during the program without credit toward the M.S. degree:

- 204-208 Advanced Calculus III
- 29-2 College Physics
- 4-4 Principles of Chemistry II
- 52:150 or 55:62 Thermodynamics

Program Requirements
For a Master of Science degree in nuclear science and technology, 36 semester hours are required with a thesis, 38 semester hours without a thesis. The degree program is intended to be flexible, while conforming as nearly as possible to the following list:

- Nuclear physics (recommended: 29:191-192) 6 s.h.
- Nuclear reactor analysis and design (recommended: 52:253) 2 s.h.
- Nuclear technology (recommended: 52:180, 56:134, 52:235) 6 s.h.
- Chemistry (recommended: 4-172 or 4-201) 3 s.h.
- Radiation biology (recommended: 77:05), lectures only; or 77:10) 4 s.h.
- Electives: 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 is
Philosophy

Department Chairman: Panayot Butcharov
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

An 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 3.6. 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 only on the basis of achievement prior to the completion of the conditions for the master's degree, but typically will take four years of graduate study to complete. 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 degreee 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, Butcharov; associate professor Addis, Cummings, D futinger, Gram; assistant professor O'Sorin, Scare

Courses for Freshmen and Sophomores Only

26:1 Elementary Ethics
2 a.h.
Trends of thought and methods of argument on moral and social issues; both sections.
26:2 Elementary Logic
2 a.h.
Elementary study of valid and invalid reasoning; both sections.
26:3 Elementary Political Philosophy
2 a.h.
Elementary philosophical study of law, government and the state; both sections.
26:7 Problems of Mind and Matter
3 a.h.
Elementary study of metaphysics and epistemology; both sections.

Courses for Undergraduates Only

26:93 Philosophies of Man
4 a.h.
Survey of major philosophical surveys of man from Plato to present; more in Core II.3.
26:103 Philosophies of Man
4 a.h.
Philosophical consideration of impact of key developments in scientific thought on man's conception of himself; more in Core II.3.

Courses for Undergraduates and Graduates

(Begins in Freshman Year)

26:01 Introduction to Philosophy
3 a.h.
Elementary introduction to philosophy; basic concepts, historical survey, logical and philosophical analysis.
26:101 Introduction to Ethics
3 a.h.
Introduction to ethical problems and to concepts useful in ethical analysis.
26:102 Introduction to Logic
3 a.h.
Introduction to logic; elementary, extensional and intensional.

Advanced Courses

26:41 Analytical Philosophy
3 a.h.
Analytical approach to philosophical problems.
26:42 Modern Philosophy
3 a.h.
Introduction to modern philosophy; its methods, its concepts, its impact on other sciences.
26:43 Logic and Critical Analysis
3 a.h.
Introduction to symbolic logic and critical thinking.}

Special Courses

26:110 Ancient Philosophy
3 a.h.
Survey of ancient philosophies.
26:112 Early Modern Philosophy
3 a.h.
Survey of early modern philosophy.
26:113 Early Modern Philosophy
3 a.h.
Survey of early modern philosophy.
26:117 Ancient Philosophy
3 a.h.
Survey of ancient philosophies.
26:118 Early Modern Philosophy
3 a.h.
Survey of early modern philosophy.
Physical Education for Men

Department: Head: Louis E. Aley
Degrees offered: B.S., B.A., M.A., Ph.D.

(Students becoming certified as teachers but majoring in subject areas other than physical education may complete programs for endorsement as athletic trainers and as coaches)

Because one of the responsibilities of the Department is to prepare physical education teachers and coaches for the public schools, programs designed to prepare such personnel conform to the aims, regulations and standards of the College of Education and to the accreditation standards set by the American Association of Colleges for Teacher Education (AECTE) and implemented through NCATE evaluation teams.

Undergraduate Programs

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-Degree Program

The pre-doctoral program, which is open only to superior students, is designed to prepare students for graduate work in physical education with special emphasis on exercise physiology, adapted physical education, sport, biomechanics or evaluation and statistics. The curriculum consists of a core of courses in physical education and selected courses in mathematics, the biological...
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 a Ph.D. degree. There is particular emphasis upon techniques of research as applied to problems related to physical education and athletics. A secondary purpose of this program is to provide advanced preparatory for teachers who wish 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 of Physical Education.

To ensure that each candidate becomes truly expert in one area of specialization, he is required to complete a minimum of 30 hours of graded work in his major area and to write an acceptable Ph.D. thesis on a problem in the area. Most of the courses in the area 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, writes a comprehensive examination in physiology which is prepared and evaluated by faculty members of the Department of Specialized Basic Physiology in the College of Medicine. Such candidates graduate with minors in physiology.

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, in community colleges, and for athletics coaches. Emphasis is placed on the application of research findings to the teaching and evaluation of basic physical education programs for all students in schools and colleges, and to the coaching of intramural and intercollegiate 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 faculty.

Financial Aid

Student financial aid is available through tuition scholarships, teaching assistantships, research assistantships, NDEA fellowships in exact physiology, teaching-research fellowships, and EPDA fellowships for the Education Specialist degree.
Physical Education for Men

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 score on the Graduate Record Examination (Aptitude Test). The student must have earned on all undergraduate work attempted a grade-point 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 no lower than 2.2; however, such students must qualify for regular status within 12 to 18 sessions 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 the 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 2.0 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 skills program, in 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 both at 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 as community 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 Primarily for Undergraduates

275 Elective Physical Education for Men (cr. arr.)

276 Elective for students who have satisfied requirements for physical education skills (4 cr., "Basic Skills"); both seniors

277 Elective Physical Education for Men (cr. arr.)

Continuation of 275; both seniors

278 Elective Physical Education for Men (cr. arr.)

Continuation of 276; both seniors

279 Elective Physical Education for Men (cr. arr.)

Continuation of 277; both seniors

2711 Introduction to Physical Education (1 cr., 1 h.)

2711 Lecture in historical and educational aspects of physical education; 1 credit

2711 Lecture: Sports of Enamel (1 or 2 cr.)

2731 Teaching of Intramural Sports I (2 cr.)

Techniques and methods of coaching and organizing groups for participation; first semester

2732 Teaching of Intramural Sports II (2 cr.)

Continuation of 2731; second semester

2731 Teaching of Gymnastics (2 cr.)

Teaching techniques of conditioning exercises, character development and character culture; both seniors

2731 Coaching and Gymnastics (2 cr.)

Physical education: high school varsity experience or equivalent

2731 Coaching of Football (2 cr.)

First semester; prerequisite: high school varsity experience or equivalent

2731 Coaching of baseball (2 cr.)

Second semester; prerequisite: high school varsity experience or equivalent

2731 Coaching of Track and Field (2 cr.)

First semester; prerequisite: high school varsity experience or equivalent

2731 Coaching of Intramural Sports (2 cr.)

Final examination; prerequisite: high school varsity experience or equivalent

2731 Coaching of Swimming (2 cr.)

2731 Coaching of Competitive Swimming (2 cr.)

Second semester; prerequisite: high school varsity experience or equivalent

2731 Coaching of Wrestling (2 cr.)

Second semester; prerequisite: high school varsity experience or equivalent

2741 Coaching of Tennis (2 cr.)

Preliminary: high school varsity experience or equivalent

2743 Officiating of Football, Basketball and Baseball (2 cr.)

2743 Administration of Intramural Activities (2 cr.)

Both seniors

2763 Human Anatomy (2 cr.)

Both seniors

2768 Laboratory Practice in Special Physical Education (3 cr.)

Preliminary: Psychology 2711 and 2725; laboratory experience in adapted physical education, recreation and corrective therapy; both seniors

2768 Laboratory Practice in Special Physical Education (3 cr.)

Continuation of 2768; both seniors

2768 Laboratory Practice I (1 cr.)

2768 Laboratory Practice II (1 cr.)

2768 Laboratory Practice III (1 cr.)

2768 Intramural Recreation before engineering

2768 Intramural Recreation before engineering

2768 Intramural Recreation before engineering
## Courses for Undergraduates and Graduates

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>27:103</td>
<td>Administration of Physical Education and Athletics</td>
<td>2 or 3</td>
<td>6-9</td>
</tr>
<tr>
<td>27:105</td>
<td>Advanced Physical Education</td>
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<tr>
<td>27:109</td>
<td>Preventive 27:103, second semester</td>
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<td></td>
</tr>
<tr>
<td>27:128</td>
<td>Advanced Theory of Wrestling</td>
<td>1 or 2</td>
<td>3-6</td>
</tr>
<tr>
<td>27:130</td>
<td>Workshop: Advanced Theory of Wrestling</td>
<td>1 or 2</td>
<td>3-6</td>
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<td>Summer only</td>
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<tr>
<td>27:131</td>
<td>Advanced Theory and Techniques of Swimming and</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Diving</td>
<td></td>
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<tr>
<td>27:152</td>
<td>Advanced Theory of Teaching Gymnastics</td>
<td>1</td>
<td>1</td>
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<tr>
<td>27:158</td>
<td>Physical Education for High Schools</td>
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<td>3</td>
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<tr>
<td>Summer only</td>
<td></td>
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<tr>
<td>27:168</td>
<td>Intramural Programs in Schools and Colleges</td>
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<tr>
<td>Summer only</td>
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<tr>
<td>27:189</td>
<td>Elementary School Physical Education</td>
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<td>3</td>
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<tr>
<td>27:183</td>
<td>Advanced Anatomy and Kinesiology</td>
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<td>3</td>
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<td></td>
<td>Emphasis on preoperative and homework</td>
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<tr>
<td>27:191</td>
<td>Instructional Study in Physical Education</td>
<td>2 or 3</td>
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<tr>
<td>27:192</td>
<td>Studies in Kinesiology</td>
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<td>3</td>
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<tr>
<td>27:195</td>
<td>Advanced Analysis of Athletic Performance</td>
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<td>3-6</td>
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<tr>
<td>27:196</td>
<td>Laboratory: Mechanical Analysis of Athletic</td>
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<td>2</td>
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<tr>
<td>Performances</td>
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<tr>
<td>27:199</td>
<td>Physical Education 'or Elementary Schools</td>
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<td>3</td>
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<tr>
<td>27:197</td>
<td>Measurement and Evaluation in Physical Education</td>
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<tr>
<td>First seminar</td>
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<tr>
<td>27:180</td>
<td>Scientific Foundations of Physical Education I</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>27:181</td>
<td>Scientific Foundations of Physical Education II</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>27:182</td>
<td>Mechanics and Kinesiology, prevention and care of</td>
<td>1 or 2</td>
<td>3-6</td>
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<tr>
<td>injuries, first aid, prehospital</td>
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<tr>
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<td>Laboratory in Athletic Training I</td>
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<tr>
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<tr>
<td>27:183</td>
<td>Laboratory in Athletic Training II</td>
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<td>Concession of 27:183, second seminar</td>
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<td>27:199</td>
<td>Supervision of Physical Education for Boys</td>
<td>3</td>
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<td>Same as Education 76:246</td>
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### Courses Primarily for Graduates

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<th>Course Title</th>
<th>Credits</th>
<th>Hours</th>
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<tr>
<td>27:201</td>
<td>Research</td>
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<td>27:203</td>
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<td>27:205</td>
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<td>First seminar</td>
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<tr>
<td>27:210</td>
<td>Advanced Theory of Athletics</td>
<td>3</td>
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<tr>
<td>Advanced theory of coaching football, basketball, tennis, track and field athletics for graduate students and</td>
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<tr>
<td>grounded to help in coaching, methods, course work and systems only</td>
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<td>27:227</td>
<td>Advanced Administration of Physical Education</td>
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<td>First seminar</td>
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<td>27:257</td>
<td>Public School Curriculum of Physical Education</td>
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<td>27:341</td>
<td>Same as Education 76:341</td>
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<tr>
<td>27:240</td>
<td>Professional Geriatric in Physical Education</td>
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<td>Edited analysis of current undergarduates and graduate programs in physical education</td>
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<tr>
<td>27:241</td>
<td>Scientific Principles of Physical Conditioning</td>
<td>1 or 3</td>
<td>3-6</td>
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<td>Student who 27:190 or equivalent must be present for one semester hour only</td>
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<tr>
<td>27:287</td>
<td>Seminar: Mechanical Analysis of Human Movement</td>
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<td>27:385</td>
<td>Advanced Measurement and Evaluation in Physical</td>
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<td>Education</td>
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</table>

### Physical Education for Women

Department Head: M. G. splendid Scott
Degree 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 specialists to work in one or more schools in a city system. The situation for present students is being recognized so that both pre-school and elementary school age children are being provided with 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, gymnastics 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 in pre-physical therapy or a B.S. degree. The non-professional and dance curriculums 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 in 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 adviser 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 students 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. 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 are 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 graduate 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 reflects 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 Halsey; associate professor De.findViewById professor Burks; Charles L. leash; Ann Miller; Stanton; assistant professor emeritus Taylor; instructors Brook, Cole, Evans, Foice, Gibb, Gribb, Gram, Matisen, Ogden, Robinson, Thayer
Courses Primarily for Undergraduates

2481 Kinesthetics 3 s.h.
Prerequisite: 2480; mechanics of movement and analysis of motor skills.
361 Independent Study or, arr.
2482 Honors Readings or, arr.
2485 Honors Seminar or, arr.
2486 Readings in Kinesthetics or, arr.

Courses for Undergraduates and Graduates

2491 Fitness for the Individual 3 s.h.
1 Fitness needs of youth and adults, physiological process of conditioning.
2494 Health Education Workshop 3 s.h.
Same as Preventive Medicine 5310
2496 Psychological Implications for Teaching Physical Education 3 s.h.
Physiological effect of exercise and lack of exercise, methods of conditioning for
various exercise programs
2497 Conferences 3 s.h.
Medical and pathological abnormalities of spine and feet; remedial work
for functional conditions and athletic injuries, prerequisites 2480 and 2481 or
equivalents.
2498 Children's Dance 2 s.h.
Dance for children of preschool to high school age.
2499 Rhythmic Analysis of Dance 2 s.h.
Nature of rhythmic composition of percussive sounds for dance; style and
technique of African, Mexican, Oriental, and modern music for the
choreographer.
2512 Measurement 3 s.h.
Selection and administration of physical measurement and motor tests, use of data.
2414 History and Appreciation of Dance 3 s.h.
Origins and development of dance, emphasis on changing forms and functions of
dance in human culture; development of dance as theatrical art.
2415 History and Appreciation of Dance 3 s.h.
Continuation of 2414
2416 Dance in Education 2 or 3 s.h.
Adaptation of dance forms to serve at different levels of elementary and secondary
grades; teaching, directing, laboratory work.
2417 Workshop in Dance: Theory and Practice 2 s.h.
Physiological and psychological bases of music, technique of progressive and differ-
ential relaxation; implications for extension, staff and efficiency of music perfor-
mance.
2418 Teaching of Synthesized Swimming 2 s.h.
2419 Organized and Administrative Physical Education 2 s.h.
2431 History of Physical Education 2 s.h.
2432 Beginning Chorography 2 s.h.
2433 Dance Production 2 s.h.
2434 Dance Production 2 s.h.
Practical, hands-on experience teaching dance to various levels of dancers; assimilation
of choreography, group and solo work.
2435 Dance Production 2 s.h.
Continuation of 2434, emphasizing in-group work.
2436 Music and movement apparatus suitable for dance accompaniment, including use
of percussion instruments and arrangement of percussion groups for dance.
2437 Extracurricular Programs in Physical Education in High
School 2 s.h.
2438 Internship in Health and Physical Education 2 s.h.
Practical, hands-on experience programs in schools as related to health of youth
in today's society
2439 Elementary School Physical Education 2 s.h.
Materials, methods, curriculum planning: opportunities for improving perform-
ance; elementary-related extracurricular activities. Junior coaching or teaching experience;
primary for elementary education majors.
2441 Physical Education 2 s.h.
Elementary Physical Education Program 2 s.h.
2445 Elementary Education Program 2 s.h.
Elementary Education Program 2 s.h.
2480 Advanced Modern Dance 3 s.h.
Continuation of 2480, may be taken as independent unit.
2487 Final Exam 2 s.h.
Standardized and advanced Red Cross course, leads to first and certification or comple-
tion of requirements.
2488 Weight Control 3 s.h.
Practitioner's course of instruction.
2470 Methods and Materials in Elementary School Physical Education 2 s.h.
2472 Methods and Materials in Elementary School Physical Education 2 s.h.
2483 Advanced Modern Dance 3 s.h.
Continuation of 2480, may be taken as independent unit.
2485 Advanced Modern Dance 3 s.h.
Continuation of 2480, may be taken as independent unit.
2487 Final Exam 2 s.h.
Standardized and advanced Red Cross course, leads to first and certification or comple-
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2470 Methods and Materials in Elementary School Physical Education 2 s.h.
2472 Methods and Materials in Elementary School Physical Education 2 s.h.
2483 Advanced Modern Dance 3 s.h.
Continuation of 2480, may be taken as independent unit.
Physical Therapy

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, pathology, 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 responsibility 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 psychology, Chemistry, physics, biology, or zoology courses must 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 for required interviews.

Preprofessional Program

Freshman Year

10.1-2 Rhetoric 8 s.h.
Physical Education Skills 4 s.h.
Historical-cultural core course(s) 8 s.h.
4.1 and 4 Principles of Chemistry I-II 6 s.h.
4.6 Elementary Chemistry Lab 2 s.h.

Sophomore Year

Literature core course(s) 8 s.h.
Foreign language (for equivalent proficiency) 8 s.h.

Social science core course(s) 8 s.h.
37.3 Principles of Animal Biology 5 s.h.
Electives

Junior Year

21M-4 Trigonometry 2 s.h.
29.1-2 College Physics 8 s.h.
37.101 Principles of Human Genetics 3 s.h.

Professional Program

First Year

60.109 Human Anatomy 4 s.h.
72.151 Intermediate Physiology 5 s.h.
10.115 Kinesiology 3 s.h.
10.131 Physical Agents cr. arr.
10.141 Professional Orientation and Ethics cr. arr.
225.101 Biostatistics 3 s.h.
60.110 Anatomy and Neuroanatomy 4 s.h.
69.104 Pathology 1 s.t.
10.110 Principles of Medicine cr. arr.
10.110 Therapeutic Exercise I 4 s.h.
10.122 Emotional Problems of the Disabled 2 s.h.

Second Year

64-112 Neurology 2 s.h.
75.130 Surgery cr. arr.
76.101 Orthopedies cr. arr.
10.1102 Principles of Medicine II cr. arr.
10.1106 Clinical Sciences 2 s.h.
10.1111 Therapeutic Exercise II 4 s.h.
10.1118 Clinical Education I 2 s.h.
10.1112 Therapeutic Exercise III 3 s.h.
10.1113 Physical Therapy and Community Health Problems 3 s.h.
10.1119 Clinical Education II 3 s.h.
10.1121 Administration 2 s.h.
10.1190 Electrotherapy 3 s.h.
10.1120 Clinical Education III 4 s.h.

Advanced Degree Programs

Included in the definition of physical therapy is the treatment and evaluation of disease by non-medical means. Elements involved in this treatment and evaluation include such things as pain, coordination, motor development, ability to move limbs, strength and posture. Most of these elements can be included under the umbrella of biomechanics, which is the study of motion and forces as they relate to the human body. The remaining elements tend to fall in the neurobiologic area (e.g. therefore a knowledge of biomechanics and neurobiology must be applied to the human for evaluation and treatment of the diseases which can potentially be helped by non-medical means.

At this point in time there is a need to scrutinize old techniques and develop new techniques so that patients may receive the best possible treatment for such diseases as cerebral palsy, stroke, arthritis, multiple sclerosis, and maladies like fractures, sprain, and joint pain. The master's degree program in physical therapy is dedicated to this end.
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, electrophysiology, 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 of 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 specifically 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 laboratories, 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, accelerometer 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 professional program consists primarily of teaching practicums by advanced degree candidates to students in the basic professional program.

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>68:161</td>
<td>Statistical Methods in the Biomedical Sciences</td>
<td>3</td>
</tr>
<tr>
<td>101:275</td>
<td>Analysis of Selected Neurological Disorders</td>
<td>3</td>
</tr>
<tr>
<td>101:213</td>
<td>Seminar: Physical Therapy</td>
<td>4</td>
</tr>
<tr>
<td>101:320</td>
<td>Seminar: Foundations of Biomechanics</td>
<td>3</td>
</tr>
<tr>
<td>72:102</td>
<td>Physiology of Exercise</td>
<td>4</td>
</tr>
<tr>
<td>27:241</td>
<td>Scientific Principles of Physical Conditioning</td>
<td>4</td>
</tr>
</tbody>
</table>

Recommended Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>101:290</td>
<td>Advanced Electrophysiology and Electrodiagnostics</td>
<td>2</td>
</tr>
<tr>
<td>101:280</td>
<td>Practicum: Teaching Methods and Design</td>
<td>2</td>
</tr>
<tr>
<td>68:255</td>
<td>Principles of Organization and Management</td>
<td>3</td>
</tr>
<tr>
<td>101:254</td>
<td>Independent Study</td>
<td>2</td>
</tr>
<tr>
<td>3:120</td>
<td>Fundamentals of Laboratory Instrumentation</td>
<td>3</td>
</tr>
<tr>
<td>7H:162</td>
<td>Designing Learning Programs for Health Careers</td>
<td>3</td>
</tr>
<tr>
<td>7P:342</td>
<td>Data Processing</td>
<td>3</td>
</tr>
<tr>
<td>7V:101</td>
<td>Operation of Audionovel Equipment</td>
<td>3</td>
</tr>
<tr>
<td>7V:110</td>
<td>Selection and Utilization of Educational Media</td>
<td>3</td>
</tr>
<tr>
<td>23:312</td>
<td>Seminar: Motor Learning</td>
<td>3</td>
</tr>
<tr>
<td>31:123</td>
<td>Psychology of Learning</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>76:121</td>
<td>Indications Conference</td>
<td>3</td>
</tr>
<tr>
<td>70:139</td>
<td>Orientation to the Rehabilitation of the Hand-</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Injured Child</td>
<td></td>
</tr>
<tr>
<td>59:223</td>
<td>Mechanics of Solids</td>
<td>4</td>
</tr>
<tr>
<td>59:21</td>
<td>Computational Methods</td>
<td>1</td>
</tr>
<tr>
<td>5:100</td>
<td>Child Development</td>
<td>3</td>
</tr>
<tr>
<td>7H:211</td>
<td>Problems in College Teaching</td>
<td>3</td>
</tr>
<tr>
<td>6A:114</td>
<td>Accounting</td>
<td>3</td>
</tr>
<tr>
<td>6A:130</td>
<td>Budgeting</td>
<td>3</td>
</tr>
</tbody>
</table>

Staff: professor emeritus W. Paul; assistant professor emeritus Faye; assistant professor Jones; Morrissey, Rambe, Sveida; clinical assistant professor D. Paul; instructors Donlevy, Skovily, Lear Super

Medical adviser for professional program: Merlin P. Scottsmann
Medical advisor for master's degree program: Richard C. Johnston

Consultants: professors Palti, Fonseti; assistant professors Steiffler, Bennett (Orthopedics); professor Miller, associate professor Holloway (Education); professor Rinta, associate professor Andrews, Chang (Engineering); professor Metcalf (Anatomy); associate professor Tipton (Physiology); professor Van Allen

Courses

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>101:201</td>
<td>Principles of Medicine</td>
<td>3</td>
</tr>
<tr>
<td>101:202</td>
<td>Principles of Medicine II</td>
<td>3</td>
</tr>
<tr>
<td>101:203</td>
<td>Introduction to medicine; lectures and discussions concerning medicine today and in future; particularly emphasize in relationship between various health providers</td>
<td>3</td>
</tr>
</tbody>
</table>

Lectures, demonstrations, case-presentations of medical disorders from standpoint of biology, clinical signs and symptoms, treatment and prognosis, premonition.
Physics and Astronomy

6.5, 6.6 Principles of Chemistry and Elementary Chemistry Laboratory 5 s.h.

or

4.6, 4.9 General Chemistry II and The Chemistry Laboratory 5 s.h.

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 astrophysics, radio astronomy and space astrophysics. A balanced and integrated program of astronomy, physics and mathematics courses 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 astrophysics.

The following courses or their equivalents are required for the Bachelor of Arts degree with a major in astronomy:

29:17, 18, 19 Introductory Physics I, II, III 12 s.h.
29:61, 62 General Astronomy 8 s.h.
29:119, 120 Introduction to Stellar Astrophysics I, II 6 s.h.
29:125, 130 Electricity and Magnetism 6 s.h.
29:312 Intermediate Laboratory 4 s.h.
29:137 Astronomical Laboratory 2 s.h.
29:191 Atomic Physics 3 s.h.
23M:130, 131 Elementary Theoretical Mechanics I, II 6 s.h.

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
29:117, 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 Honors in Physics or 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 a degree in physics with specialization in astronomy or astrophysics.

The Department of Physics and Astronomy cooperates in interdisciplinary doctoral programs with the Program in Applied Mathematical Sciences (see "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 residency. 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 in an oral exam 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 (29:281).

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:

29:117 Optics 3 s.h.
29:118 Kinetic Theory and Thermodynamics 3 s.h.
23M:130, 131 Elementary Theoretical Mechanics 6 s.h.
29:125, 130 Electricity and Magnetism 6 s.h.
29:131 Advanced Laboratory 4 s.h.
29:171, 172 Methods of Theoretical Physics 6 s.h.
29:191 Atomic Physics 3 s.h.
29:92 Nuclear Physics 3 s.h.
29:193 Introductory Solid State Physics 3 s.h.
The student's plan of study should provide for as much advanced work as possible and previous preparation permit.

Master of Science Degree in Astronomy

The M.S. degree is offered 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:

**Deleve:**

29:133 Advanced Laboratory 4 s.h.
29:192 Nuclear Physics 3 s.h.
29:193 Introductory Solid State Physics 3 s.h.

**Add:**

29:119, 120 Introduction to Stellar Astrophysics I, II 6 s.h.
29:121 Solar System Astrophysics 3 s.h.
29:133 Advanced Laboratory 2 s.h.
29:137 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:

29:131 Radio Astronomy 3 s.h.
29:232, 233 Theoretical Astrophysics I, II 6 s.h.
29:234 Stellar Structure and Evolution 4 s.h.
29:235 Special Topics in Planetary and Space Science 2 s.h.
29:263 Senior Thesis: Astrophysics 2-6 s.h.

Doctor of Philosophy Degree in Physics

The program of study for the Ph.D. degree with major in physics includes:

- Thorough coursework in both classical 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 put 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:

29:191, 192, 113 Atomic Physics, Nuclear Physics and Introductory Solid State Physics
29:205 Classical Mechanics
29:212 Statistical Mechanics I
29:213, 214 Classical Electrodynamics
29:245, 246 Quantum Mechanics I, II

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 electronic and machine shops for the use of advanced students and the research staff.

Experimental research is conducted in the fields of nuclear structure physics, inorganic and space physics, in astrophysics, solar and planetary physics, chemical physics and solid state physics.

Theoretical research is devoted to atomic and nuclear theory, quantum field theory, analytical 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: Professor Carlson, Frank, Montgomery, Nelson, Norbeck, van Allen; Professor Emeriti: Tyndall, Wylie; associate professors: Carpenter, Garnett, Henshaw, Klink, Knapp, McLennan, Noff, Savage, associate professor Emmons, Joyce, Payne, Schissinger, Schweizer, Shawman; visiting associate professor Daniel W. Swift; research assistant professor Emerick.

Courses

Physics

Prerequisites and courses specified as guides and may be waived by Instructor; students may not repeat for credit or quality points any intermediate course if they have already completed higher-level course for which elementary course, or its equivalent, is prerequisite; core courses: 29:1, 2 College Physics, eight semes-
Physics and Astronomy

29:246 Quantum Mechanics I
3 s.h.
Nuclear and atomic quantum mechanics. Schrödinger wave mechanics, Hilbert space methods, Schroedinger's equation, spin, angular momentum, identical particles, relativistic applications; introduction to relativistic theory; prerequisite: preprob 29:181, 171.

29:247 Quantum Mechanics II
3 s.h.
Continuation of 29:246.

29:249 Advanced Nuclear Physics
3 s.h.
Phenomena of nuclear physics and solid-state interpretation; extensive properties of nuclei, nuclear reactions, shell model, collective model; 1 and 2 gamma transitions; nuclear reaction mechanisms and other topics; prerequisite: 29:181, 191 and 246; may be repeated for credit.

29:250 Advanced Quantum Physics
3 s.h.
Continuation of 29:249.

29:261 Bernstein Plasma Physics
or. cr.
Discussion of current research.

29:262 Bernstein Solid State Physics
or. cr.
Discussion of current research.

29:264 Bernstein, Teaching of Physics and Astronomy
or. cr.
Discussion of methods, pedagogy and organization.

29:265 Bernstein, Theoretical Physics
or. cr.
Discussion of current research.

29:266 Bernstein, Space Physics
or. cr.
Discussion of current research.

29:267 Bernstein Nuclear Physics
or. cr.
Discussion of current research.

29:268 Special Topics in Nuclear Physics
or. cr.
Advanced lecture course on one or more of following topics: nuclear models, theory of nuclear reactions, weak interactions and lepton interactions; prerequisite: 29:181, 246. 29:268 may be repeated for credit.

29:271 Theoretical Solid State Physics
3 s.h.
Central principles of quantum theory of solids; lattice dynamics, electronic properties, macroscopic lattice effects, semi-conductors, magnetism, and nuclear spins; emphasis on concepts of elementary solutions; prerequisite: 29:181, 245, 246.

29:272 Advanced Solid State Physics
or. cr.
Continuation of 29:271; may be repeated.

29:273 Relativity
3 s.h.
Relativistic formulation of mechanics and electromagnetism; Einstein's theory of relativity. Graduate level.

29:274 Statistical Mechanics II
3 s.h.
Advanced topics in statistical mechanics; content may vary from year to year; may be repeated for credit.

29:276 Special Topics in Quantum Mechanics
3 s.h.
Continuation of 29:246 in quantum theory, field theory, dispersion relations, group theory, analysis of fundamental particle classifications schemes. Racco poles and generalizations; topics discussed vary from year to year; prerequisite: 29:181, 246; may be repeated.

29:278 Solar-Terrestrial Physics
3 s.h.
Plasmaphysics in solar atmosphere, coronal and material properties and inter-planetary magnet field, magnetic storms, aurorae and geographically trapped radiation, may be repeated.

29:281 Research in Physics
or. cr.
Prerequisite: consent of head of Department.

29:280 Physics and Chemistry of the Upper Atmosphere
2 s.h.
Physics of solar and leased gases, absorption of solar radiation in relation to ionosphere, atmospheric gases and chemical processes in ionosphere, atomic curves and ionization, terrestrial magnetism, aurorae, magnetospheric and interplanetary magnetic field, magnetic storms, aurora borealis and geographically trapped radiation, may be repeated.

29:294 Advanced Plasma Physics I
3 s.h.
Advanced lecture course on plasma physics; introductory plasma equations, plasmas, plasmas in plasmas, plasmas and intermediate plasmas; may be repeated for credit.

29:295 Advanced Plasma Physics II
3 s.h.
Continuation of 29:294; may be repeated for credit.

Astronomy
See supplementary notes under Physics series.

29:61 General Astronomy
3 or 4 s.h.
Open to freshmen; descriptive lectures and study of astronomical techniques and of the components of solar system; introductory level; sun, earth, moon, planets, meteorites, comets, asteroids, comet nuclei and interplanetary meteorites; photographic and visual exploration of the solar system; work with telescope and problem work; prerequisite: at least one year high school geometry and perspective.

29:104 Research in Astronomy
or. cr.
Graduate level of Department before registering.

29:103 Undergraduate Seminar
See "Physics".

29:106 Research in Astronomy
or. cr.
Graduate level of Department before registering.

29:105 General Astronomy
4 s.h.
Abridged course offered only in summer session and on Saturdays during the University summer session; prerequisite same as for 29:104, primarily for secondary and high school teachers of physics.

29:119 Introduction to Stellar Astrophysics I
3 s.h.
Fundamentals of astronomy and stellar spectroscopy, properties of stars, spectroscopy and photometry, effects of weather and atmospheric turbulence, linear and non-linear distortions, absence of an observer, and techniques for investigation of structure of galaxy and star systems; prerequisites: 29:119 and Mathematics 226:26 or 226:26 or equivalent; alternate years, offered 1971-72.

29:120 Introduction to Stellar Astrophysics II
3 s.h.
Continuation of 29:119; prerequisites: 29:119 and Mathematics 226:26 or 226:26 or equivalent; alternate years; offered 1971-72.

29:121 Stellar Systems I
3 s.h.
Stellar systems, masses and distances; motion and directions; cosmological measurements; motion and evolution of solar systems; prerequisite: 29:119 and Mathematics 226:26 or 226:26 or equivalent; alternate years; offered 1971-72.

29:125 Stellar Systems II
3 s.h.
Stellar systems, mass and distance; motion and directions; cosmological measurements; motion and evolution of solar systems; prerequisite: 29:119 and Mathematics 226:26 or 226:26 or equivalent; alternate years; offered 1971-72.

29:151 Astronomy Seminar
2 s.h.
Active lecture course and research with 1 and 2 hour seminars; techniques of astronomical photography, photometry and spectrophotometry; laboratory work in data reduction, science lectures; material and personnel supervision; prerequisite: 29:125 and consent of instructor; may be repeated.

29:250 Research in Astronomy
or. cr.
See "Physics".

29:251 Theoretical Astrophysics I
3 s.h.
Theory of stellar photometry and observational spectra of stars; formation and evolution of stars; survey of important stars; prerequisite: consent of instructor; alternate years; offered 1971-72.

29:252 Theoretical Astrophysics II
3 s.h.
Interstellar matter, radiation, and galactic radiation; continuation of 29:251, which is prerequisite for this course; offered 1971-72.

29:254 Structure and Evolution
4 s.h.
Structure of solar atmosphere; phenomena and spectral synthesis in stars and evolution; research, supervision, consent of instructor; alternate years; offered 1971-72.

29:256 Special Topics in Planetary Science
3 s.h.
Course or more of following topics: solar interior, photometry, spectroscopy, and corotation. Spectroscopy of extraterrestrial objects; planets in the Planckian; structure, surfaces, atmospheric and electromagnetic properties of planets; planet surfaces and models; may be repeated.

29:263 Bernstein, Astrophysics
or. cr.
Graduate level of Department before registering.

29:268 Research in Astronomy
or. cr.
Prerequisite: consent of head of Department.
Political Science

Department Chairperson: Russell M. Rose

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

The program in political science deals with general principles of human behavior and organization which enable us 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 opportunities 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, and 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

Undergraduates seeking a standard major must meet the following requirements:

A. At least 34 semester hours of work in political science, including:
   - 20.1 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 one of more of these 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 3.0. If a student is in good or maintain 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 3.3 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, 30188) 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 senior 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 and friendly with, and are 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, seminar, 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 30-290 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 recommendations 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 degrees 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 3
- 30:120 Introduction to Public Administration 3
- 30:121 Municipal Administration 3
- 30:221 Financial Administration 4
- 30:223 Problems in Public Administration 4
- 30:421 Urbanization 4
- 30:155 Environmental Health 3
- 102:101 Introduction to Planning 3
- 31:154 Personal Psychology 3
- 30:583 Internship 8

**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.

**Major 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 groups:

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 the 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 limited 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 Telexprinters,*/ several communications terminals and a card reader/disk printer.

Special Faculty Strengths
The American Council on Education's most recent ranking of political science departments offering graduate studies placed the Iowa Department of Political Science eighth 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 (1926-1942) 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. Faculty 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: Professors Boyston, Davis, Johnson, Kelso, Loseeberg, Murray, Patterson, Ross, Schmidhauser, Snow, Van Dyke, Walke; Professor emeritus Porter; Associate Professors Kim, McCrone, Welch; assistant Professors Cary, Green, Irwin, McCluxby, Peterson; instructor Madsen

Introductory Undergraduate Courses
31:4 Introduction to American Politics 4 s.h.
Political behavior of American individuals and groups and institutional structures of political arenas; familiarizes non-political science students with the nature of federal government, state government, and local government; emphasizes the role of political parties, interest groups, and political parties in the United States, development of motivations, norms, roles; on campus, 4 s.h.

31:13 Introduction to Comparative Politics 4 s.h.
Comparative analysis of the political behavior of American and foreign states; emphasis on the role of political parties, interest groups, and political parties in the United States, development of motivations, norms, roles; on campus, 4 s.h.

Advanced Undergraduate Courses
32:10 The Presidency 3 s.h.
Political behavior of American individuals and groups and institutional structures of political arenas; familiarizes non-political science students with the nature of federal government, state government, and local government; emphasizes the role of political parties, interest groups, and political parties in the United States, development of motivations, norms, roles; on campus, 4 s.h.

32:13 Comparative Government 3 s.h.
Comparative analysis of the political behavior of American and foreign states; emphasis on the role of political parties, interest groups, and political parties in the United States, development of motivations, norms, roles; on campus, 4 s.h.

32:15 American Public Policy 3 s.h.
Functions and policies of national government; emphasis on domestic policy making, impact of public policy making, impact of public policy making, role of federal court system, development of motivations, norms, roles; on campus, 4 s.h.
30:341 Political Systems of Western Europe 4 s.h.
Select four. Western European political systems or political thought courses.
30:342 Comparative Government 4 s.h.
Select at least two. Comparative government courses.
30:343 East European Politics 4 s.h.
Select two. East European politics courses.
30:344 Latin American Politics 4 s.h.
Select two. Latin American politics courses.
30:345 Comparative Political Behavior 4 s.h.
Select two. Comparative political behavior courses.
30:346 Comparative Politics 4 s.h.
Select two. Comparative politics courses.
30:347 Comparative Political Systems 4 s.h.
Select two. Comparative political systems courses.
30:348 Politics and Social Problems 4 s.h.
Select two. Politics and social problems courses.
30:349 Political Behavior 4 s.h.
Select two. Political behavior courses.
30:351 Social Science Research 4 s.h.
Select two. Social science research courses.
30:352 Policy Analysis 4 s.h.
Select two. Policy analysis courses.
30:353 Political Science Internships 4 s.h.
Select one. Political science internships.
30:354 Policy Making and Public Administration 4 s.h.
Select one. Policy making and public administration courses.
30:355 Political Science Internships 4 s.h.
Select one. Political science internships.
30:356 Politics and Social Problems 4 s.h.
Select one. Politics and social problems courses.
30:357 Public Policy and Administration 4 s.h.
Select one. Public policy and administration courses.
30:358 Policy Analysis 4 s.h.
Select one. Policy analysis courses.
31:105 Introduction to Psychology 4 s.h.
Select one. Introduction to psychology courses.
31:201 Advanced Research Seminar 4 s.h.
Select one. Advanced research seminar courses.
31:202 Political Science 4 s.h.
Select one. Political science courses.
31:301 Personality and Social Psychology 4 s.h.
Select one. Personality and social psychology courses.
31:302 Social Psychology 4 s.h.
Select one. Social psychology courses.
31:303 Developmental Psychology 4 s.h.
Select one. Developmental psychology courses.
31:304 Cognition and Perception 4 s.h.
Select one. Cognition and perception courses.
31:305 Social Psychology 4 s.h.
Select one. Social psychology courses.
31:306 Personality and Social Psychology 4 s.h.
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31:307 Social Psychology 4 s.h.
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31:338 Personality and Social Psychology 4 s.h.
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31:339 Social Psychology 4 s.h.
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31:340 Personality and Social Psychology 4 s.h.
Select one. Personality and social psychology courses.
31:341 Social Psychology 4 s.h.
Select one. Social psychology courses.
31:342 Personality and Social Psychology 4 s.h.
Select one. Personality and social psychology courses.
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 Mathematie 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 31:433, 31:453, General Psychology, and 31:44 Psychological Measurement or 31:120 Experimental Psychology I and 31:433 Introduction to Statistical Methods, and 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 31:119, 31:123, 31:431, 31:120 and 31:123 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 geology, and either one semester of calculus or 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.

Honor 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 adviser 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 and teaching at both undergraduate and graduate levels.

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 adviser.

Action on the student's application for the M.A. degree without thesis will be taken after completion of the specified coursework with a minimum grade-point average of 2.7 and satisfactory performance on a written and/or oral examination covering the areas of specialization.

Ph.D. Programs

The Department provides specialized training leading to the Ph.D. degree in general experimental psychology, physiological psychology, social psychology and clinical psychology and personality. The student is expected to make original contributions to the body of knowledge by means of research in the specified area.

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courses and seminars, the Department invites nationally and internationally eminent psychologists to appear as guest speakers 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 unparalleled in importance and is an indispensable component of graduate 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 collaborator's laboratory 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 independent 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 psychology, 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 undergraduate academic achievement, letters of reference and performance 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 designed and used exclusively for teaching and research in psychology.

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 observation suites equipped with closed-circuit TV and audio monitoring equipment for use in clinical and social psychological experimentation; and three animal colonies, soundproof rooms, two surgery, a laboratory of histology, a darkroom, electrophysiological 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 Hospitals; 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 evaluation of graduate programs, its faculty has ranked among the foremost in its field.

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 participate in a 10-week summer program of full-time research on 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 Honors advisor.

Program participants receive two semesters of graduate preparation 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.


Affiliated Staff: research professor Knott, clinical professor Carter; research associate professor O'Connor, clinical assistant professors Boulware, Stryker, research associate Beter

Librarian-in-Charge, Psychology Library: Anne G. Evans

Courses for Undergraduates Only

Bill 310 or 312 is prerequisite to further courses in psychology, except 3117 and 3114. Both must be taken before 3113 is acceptable for sophomore credit.

3111 Elementary Psychology 4 s.h.
3115 Introduction to Psychology 4 s.h.
3118 General Psychology 4 s.h.
3119 Psychobiology 3 s.h.
3121 Psychobiology 3 s.h.
3122 Psychobiology 3 s.h.
3123 Medical Psychology 3 s.h.
3124 Psychological Statistics 3 s.h.
3126 Educational Psychology and Measurement 3 s.h.
3127 Psychology in Business and Industry 3 s.h.
3129 Psychological Aspects of Personal Adjustment and Training 3 s.h.
3130 Laboratory in Psychological Measurement 3 s.h.
3131 Educational Psychology and Measurement 3 s.h.
<table>
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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>2143</td>
<td>Psychological Measurement</td>
<td>3 a.h.</td>
<td>Concepts and procedures basic to design and utilization of behavioral variables studied in context of experimental and applied problems.</td>
</tr>
<tr>
<td>2142</td>
<td>Introduction to Child Psychology</td>
<td>4 a.h.</td>
<td>Research and theory in child psychology, with emphasis on basic principles of learning and motivation. Emphasis on Child Behavior 595. Students planning optional laboratory should register for 2141.</td>
</tr>
<tr>
<td>2145</td>
<td>Current Research in Psychology</td>
<td>2 a.h.</td>
<td>Representative research recently reported in psychological journals or now in progress in major psychological laboratories. Emphasis on student exploring new or improved methods of obtaining and analyzing experimental data. May be repeated as necessary.</td>
</tr>
<tr>
<td>2141</td>
<td>Special Readings and Projects</td>
<td>2 a.h.</td>
<td>Selections of readings in psychology journals or in progress in major psychological laboratories. Emphasis on student exploring new or improved methods of obtaining and analyzing experimental data. May be repeated as necessary.</td>
</tr>
<tr>
<td>2210</td>
<td>Advanced Research Methods in Psychology</td>
<td>3 a.h.</td>
<td>Focus on special topics in psychology. Special permission of staff member and approval of head of Department.</td>
</tr>
<tr>
<td>2146</td>
<td>Honors Seminar in Psychology</td>
<td>2 a.h.</td>
<td>Special laboratory research leading to oral presentation and written paper in comprehensive basis in psychology. Emphasis on completion of Honors Seminar report.</td>
</tr>
<tr>
<td>2148</td>
<td>Honors Thesis Research</td>
<td>3 a.h.</td>
<td>Special original research project, leading to written thesis and oral defense, open only to Honors student.</td>
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Advanced Courses

General, Historical and Theoretical Psychology

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<tbody>
<tr>
<td>2121</td>
<td>Generalized General Psychology</td>
<td>3 a.h.</td>
<td>Survey of all aspects of psychology, including historical and theoretical aspects.</td>
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<tr>
<td>2124</td>
<td>Systematic Approaches to the Study of Behavior</td>
<td>3 a.h.</td>
<td>Review of major concepts and empirical problems identified in the history of psychology and behavioral theory.</td>
</tr>
<tr>
<td>2126</td>
<td>History and Systems of Psychology</td>
<td>3 a.h.</td>
<td>Overview of the development of psychology, including the evolution of the major theoretical systems.</td>
</tr>
<tr>
<td>2127</td>
<td>Neuropsychology, Psychobiology, Behaviorism, Marxist Psychology</td>
<td>3 a.h.</td>
<td>Survey of important areas in psychology.</td>
</tr>
<tr>
<td>2128</td>
<td>Psychological Problems of the Special Sciences</td>
<td>3 a.h.</td>
<td>Survey of important areas in psychology.</td>
</tr>
<tr>
<td>2131</td>
<td>Basic Skills in Design, Conceptual and Use of Laboratory Apparatus</td>
<td>2 a.h.</td>
<td>Includes measurement, laboratory techniques, and laboratory report writing.</td>
</tr>
<tr>
<td>2132</td>
<td>Laboratory Techniques II</td>
<td>2 a.h.</td>
<td>Advanced laboratory techniques and computer applications in psychology. Emphasis on student-designed laboratory experiments.</td>
</tr>
<tr>
<td>2133</td>
<td>Basic Techniques of Neuropsychopharmacology</td>
<td>2 a.h.</td>
<td>Identification of development of knowledge and concepts in behavioral psychology.</td>
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Quantitative Methods and Psychometrics

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<tbody>
<tr>
<td>2143</td>
<td>Introduction to Statistical Methods</td>
<td>3 a.h.</td>
<td>Overview of basic concepts of measurement and statistical analysis.</td>
</tr>
<tr>
<td>2144</td>
<td>Statistical Inference in Behavioral Science</td>
<td>3 a.h.</td>
<td>Introduction to basic concepts and techniques of statistical analysis.</td>
</tr>
<tr>
<td>2145</td>
<td>Behavioral Psychology: Analysis of variance</td>
<td>3 a.h.</td>
<td>Analysis of variance and related topics in behavioral psychology majors only.</td>
</tr>
<tr>
<td>2146</td>
<td>Statistical Analysis II</td>
<td>3 a.h.</td>
<td>Includes measurement, laboratory techniques, and laboratory report writing.</td>
</tr>
<tr>
<td>2147</td>
<td>Primary Psychology: Review of statistical concepts and techniques used in experimental design, planning and analysis of single and multiple experiments.</td>
<td>3 a.h.</td>
<td>Includes measurement, laboratory techniques, and laboratory report writing.</td>
</tr>
</tbody>
</table>

Learning, Motivation and Sensory Functions

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2148</td>
<td>Sensory Physiology, Learning and Cognition Processes</td>
<td>3 a.h.</td>
<td>An introduction to contemporary psychological theory and research.</td>
</tr>
<tr>
<td>2149</td>
<td>Perception and Sensory Processing and Cognition Processes</td>
<td>3 a.h.</td>
<td>Theoretical and empirical basis of learning and human behavior; processes underlying behavior.</td>
</tr>
<tr>
<td>2150</td>
<td>Motivation</td>
<td>3 a.h.</td>
<td>Factors contributing to motivation and external control of behavior.</td>
</tr>
<tr>
<td>2151</td>
<td>Cognition</td>
<td>3 a.h.</td>
<td>Recency contributing to memory recall and external representation of environmental stimuli.</td>
</tr>
<tr>
<td>2152</td>
<td>Perception</td>
<td>3 a.h.</td>
<td>Current developments in experimental approaches to perception.</td>
</tr>
</tbody>
</table>

Experimental Methods

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2153</td>
<td>Psychological Methods in Psychology</td>
<td>3 a.h.</td>
<td>Application of general psychological methods in psychology.</td>
</tr>
<tr>
<td>2154</td>
<td>Psychophysics</td>
<td>2 a.h.</td>
<td>Methods for understanding and use of mechanical methods in psychology.</td>
</tr>
<tr>
<td>2155</td>
<td>Psychophysiology</td>
<td>2 a.h.</td>
<td>Principles and theory of psychophysics.</td>
</tr>
<tr>
<td>2156</td>
<td>Behavioral Psychology</td>
<td>3 a.h.</td>
<td>Methodological aspects of psychology.</td>
</tr>
<tr>
<td>2157</td>
<td>Sensory Physiology</td>
<td>2 a.h.</td>
<td>Methodological aspects of psychology.</td>
</tr>
<tr>
<td>2158</td>
<td>Learning and Cognition Processes</td>
<td>3 a.h.</td>
<td>Methodological aspects of psychology.</td>
</tr>
<tr>
<td>2159</td>
<td>Sensory Processing</td>
<td>3 a.h.</td>
<td>Methodological aspects of psychology.</td>
</tr>
</tbody>
</table>

Psychology

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2150</td>
<td>Sensory Physiology, Learning and Cognition Processes</td>
<td>3 a.h.</td>
<td>An introduction to contemporary psychological theory and research.</td>
</tr>
<tr>
<td>2151</td>
<td>Cognition</td>
<td>3 a.h.</td>
<td>Factors contributing to motivation and external control of behavior.</td>
</tr>
<tr>
<td>2152</td>
<td>Motivation</td>
<td>3 a.h.</td>
<td>Factors contributing to motivation and external control of behavior.</td>
</tr>
<tr>
<td>2153</td>
<td>Psychological Methods in Psychology</td>
<td>3 a.h.</td>
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</tr>
<tr>
<td>2154</td>
<td>Psychophysics</td>
<td>2 a.h.</td>
<td>Methods for understanding and use of mechanical methods in psychology.</td>
</tr>
<tr>
<td>2155</td>
<td>Psychophysiology</td>
<td>2 a.h.</td>
<td>Principles and theory of psychophysics.</td>
</tr>
<tr>
<td>2156</td>
<td>Behavioral Psychology</td>
<td>3 a.h.</td>
<td>Methodological aspects of psychology.</td>
</tr>
<tr>
<td>2157</td>
<td>Sensory Physiology</td>
<td>2 a.h.</td>
<td>Methodological aspects of psychology.</td>
</tr>
<tr>
<td>2158</td>
<td>Learning and Cognition Processes</td>
<td>3 a.h.</td>
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</tr>
<tr>
<td>2159</td>
<td>Sensory Processing</td>
<td>3 a.h.</td>
<td>Methodological aspects of psychology.</td>
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</table>

Concentration in Experimental Psychology

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2200</td>
<td>Advanced Research Methods in Psychology</td>
<td>3 a.h.</td>
<td>Survey of important areas in psychology.</td>
</tr>
<tr>
<td>2201</td>
<td>Basic Skills in Design, Conceptual and Use of Laboratory Apparatus</td>
<td>2 a.h.</td>
<td>Includes measurement, laboratory techniques, and laboratory report writing.</td>
</tr>
<tr>
<td>2202</td>
<td>Laboratory Techniques II</td>
<td>2 a.h.</td>
<td>Advanced laboratory techniques and computer applications in psychology. Emphasis on student-designed laboratory experiments.</td>
</tr>
<tr>
<td>2203</td>
<td>Basic Techniques of Neuropsychopharmacology</td>
<td>2 a.h.</td>
<td>Identification of development of knowledge and concepts in behavioral psychology.</td>
</tr>
<tr>
<td>2204</td>
<td>Basic Techniques of Neuropsychopharmacology</td>
<td>2 a.h.</td>
<td>Identification of development of knowledge and concepts in behavioral psychology.</td>
</tr>
</tbody>
</table>

Concentration in Behavioral Psychology

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2200</td>
<td>Advanced Research Methods in Psychology</td>
<td>3 a.h.</td>
<td>Survey of important areas in psychology.</td>
</tr>
<tr>
<td>2201</td>
<td>Basic Skills in Design, Conceptual and Use of Laboratory Apparatus</td>
<td>2 a.h.</td>
<td>Includes measurement, laboratory techniques, and laboratory report writing.</td>
</tr>
<tr>
<td>2202</td>
<td>Laboratory Techniques II</td>
<td>2 a.h.</td>
<td>Advanced laboratory techniques and computer applications in psychology. Emphasis on student-designed laboratory experiments.</td>
</tr>
<tr>
<td>2203</td>
<td>Basic Techniques of Neuropsychopharmacology</td>
<td>2 a.h.</td>
<td>Identification of development of knowledge and concepts in behavioral psychology.</td>
</tr>
<tr>
<td>2204</td>
<td>Basic Techniques of Neuropsychopharmacology</td>
<td>2 a.h.</td>
<td>Identification of development of knowledge and concepts in behavioral psychology.</td>
</tr>
</tbody>
</table>
Psychology

1.0121 Motivation and Emotion 3 a.h.
1.0122 Cognitive and Learning 3 a.h.
1.0123 Psychology of Language 3 a.h.
1.0124 Social Psychology 3 a.h.
1.0125 Personality 3 a.h.
1.0126 Developmental Psychology 3 a.h.
1.0127 Biological Psychology 3 a.h.
1.0128 Clinical Psychology 3 a.h.
1.0129 Comparative Psychology 3 a.h.
1.0129 Psychological Assessment 3 a.h.
1.0129 Social Psychology 3 a.h.

Social Psychology

1.0191 Advanced Social Psychology 3 a.h.
1.0192 Personality 3 a.h.
1.0193 Interpersonal Dynamics in Contemporary Society 3 a.h.
1.0194 Social Psychology of Organizations 3 a.h.
1.0195 Social Psychology of Health 3 a.h.
1.0196 Social Psychology of Gender 3 a.h.
1.0197 Social Psychology of Culture 3 a.h.
1.0198 Social Psychology of Aging 3 a.h.
1.0199 Social Psychology of Diversity 3 a.h.
1.0200 Social Psychology of Technology 3 a.h.
1.0201 Social Psychology of Law 3 a.h.
1.0202 Social Psychology of Religion 3 a.h.
1.0203 Social Psychology of Education 3 a.h.
1.0204 Social Psychology of Media 3 a.h.
1.0205 Social Psychology of Environment 3 a.h.
1.0206 Social Psychology of Politics 3 a.h.
1.0207 Social Psychology of Science 3 a.h.
1.0208 Social Psychology of Economics 3 a.h.
1.0209 Social Psychology of Information Technology 3 a.h.
1.0210 Social Psychology of Health 3 a.h.
1.0211 Social Psychology of Communication 3 a.h.
1.0212 Social Psychology of Law 3 a.h.
1.0213 Social Psychology of Religion 3 a.h.
1.0214 Social Psychology of Education 3 a.h.
1.0215 Social Psychology of Media 3 a.h.
1.0216 Social Psychology of Environment 3 a.h.
1.0217 Social Psychology of Politics 3 a.h.
1.0218 Social Psychology of Science 3 a.h.
1.0219 Social Psychology of Economics 3 a.h.
1.0220 Social Psychology of Information Technology 3 a.h.
1.0221 Social Psychology of Health 3 a.h.
1.0222 Social Psychology of Communication 3 a.h.
1.0223 Social Psychology of Law 3 a.h.
1.0224 Social Psychology of Religion 3 a.h.
1.0225 Social Psychology of Education 3 a.h.
1.0226 Social Psychology of Media 3 a.h.
1.0227 Social Psychology of Environment 3 a.h.
1.0228 Social Psychology of Politics 3 a.h.
1.0229 Social Psychology of Science 3 a.h.
1.0230 Social Psychology of Economics 3 a.h.
1.0231 Social Psychology of Information Technology 3 a.h.
1.0232 Social Psychology of Health 3 a.h.
1.0233 Social Psychology of Communication 3 a.h.
1.0234 Social Psychology of Law 3 a.h.
1.0235 Social Psychology of Religion 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.

The Bachelor of Science Degree

A student seeking the Bachelor of Science degree must satisfy the College of Liberal Arts general graduation requirements.

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>28:21-22</td>
<td>Teaching Recreational Sports</td>
</tr>
<tr>
<td>28:37</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>28:37</td>
<td>First Aid (or equivalent)</td>
</tr>
<tr>
<td>34:120</td>
<td>Principles of Social Psychology</td>
</tr>
<tr>
<td>68:126</td>
<td>Written Communications in Business</td>
</tr>
</tbody>
</table>

Recreation Education

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, intramural, and outdoor recreation. 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 the professional work experience in an agency setting appropriate to his or her best career interest.

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

Designs 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 teaching 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 agencies.

The student may choose from these areas of skills emphasis:

Art

Music

Outdoor Recreation

Dance

Sports

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

34:120 Principles of Social Psychology

68:126 Written Communications in Business
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—104.1055 Problems in Honors, 104.1056 Seminar: Recreation Education Research. With the permission of the chairmen 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. Applicant. To be considered for admission, the student must have earned a grade-point average of 2.0 or higher on all undergraduate work attempted.

M.A. with Thesis

The program leading to the Master of Arts degree with thesis is designed as the first step in a graduate program of study leading to an advanced degree. Particular emphasis is placed on the techniques of research.

Undergraduate Prerequisites

The undergraduate courses listed below (or equivalents), together with elective courses in recreation and related areas, is sufficient to complete 30 semester hours, and are required. Enrollee 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 Areas (three of the following)</td>
<td>6</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</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 as early as possible.

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>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>28.205 Techniques of Research</td>
<td>4</td>
</tr>
<tr>
<td>34.111 Elementary Social Statistics</td>
<td>3</td>
</tr>
<tr>
<td>77.183 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 to 3</td>
</tr>
<tr>
<td>104.402 Seminar: Thesis II</td>
<td>2 to 4</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>28.205 Techniques of Research</td>
</tr>
</tbody>
</table>

Staff: associate professor Nebraska, assistant professors Gruweck, Lindsey, instructor Hodges, Lander Lough

Courses Primarily for Undergraduates

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>104.055 Foundations of Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104.056 Recreation Leadership</td>
<td>3</td>
</tr>
<tr>
<td>104.057 Social Recreation</td>
<td>2</td>
</tr>
<tr>
<td>104.058 Practice of Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104.059 Fundamentals of Recreation</td>
<td>5</td>
</tr>
<tr>
<td>104.060 Techniques of Recreation</td>
<td>5</td>
</tr>
<tr>
<td>104.061 Field Work in Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104.062 Outdoor Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104.063 Social Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104.064 Leadership</td>
<td>3</td>
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<tr>
<td>104.065 Management</td>
<td>3</td>
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<tr>
<td>104.066 Recreation Leadership</td>
<td>3</td>
</tr>
<tr>
<td>104.067 Social Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104.068 Practice of Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104.069 Fundamentals of Recreation</td>
<td>5</td>
</tr>
<tr>
<td>104.070 Techniques of Recreation</td>
<td>5</td>
</tr>
<tr>
<td>104.071 Field Work in Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104.072 Outdoor Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104.073 Social Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104.074 Leadership</td>
<td>3</td>
</tr>
<tr>
<td>104.075 Management</td>
<td>3</td>
</tr>
<tr>
<td>104.076 Recreation Leadership</td>
<td>3</td>
</tr>
<tr>
<td>104.077 Social Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104.078 Practice of Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104.079 Fundamentals of Recreation</td>
<td>5</td>
</tr>
<tr>
<td>104.080 Techniques of Recreation</td>
<td>5</td>
</tr>
<tr>
<td>104.081 Field Work in Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104.082 Outdoor Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104.083 Social Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104.084 Leadership</td>
<td>3</td>
</tr>
<tr>
<td>104.085 Management</td>
<td>3</td>
</tr>
<tr>
<td>104.086 Recreation Leadership</td>
<td>3</td>
</tr>
<tr>
<td>104.087 Social Recreation</td>
<td>3</td>
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<tr>
<td>104.088 Practice of Recreation</td>
<td>3</td>
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<td>104.089 Fundamentals of Recreation</td>
<td>5</td>
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<tr>
<td>104.090 Techniques of Recreation</td>
<td>5</td>
</tr>
<tr>
<td>104.091 Field Work in Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104.092 Outdoor Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104.093 Social Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104.094 Leadership</td>
<td>3</td>
</tr>
<tr>
<td>104.095 Management</td>
<td>3</td>
</tr>
<tr>
<td>104.096 Recreation Leadership</td>
<td>3</td>
</tr>
<tr>
<td>104.097 Social Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104.098 Practice of Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104.099 Fundamentals of Recreation</td>
<td>5</td>
</tr>
<tr>
<td>104.100 Techniques of Recreation</td>
<td>5</td>
</tr>
</tbody>
</table>

Courses for Undergraduates and Graduates

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>104/105 Readings in Leisure</td>
<td>3-4</td>
</tr>
<tr>
<td>104/110 Work in Recreation</td>
<td>3-4</td>
</tr>
<tr>
<td>104/115 Field Work in Recreation</td>
<td>3-4</td>
</tr>
</tbody>
</table>

Courses leading to baccalaureate degrees in recreation include a variety of courses in the arts and sciences as well as courses in recreation. Students interested in the major field of recreation should consult the Department of Recreation and Leisure Services for current course offerings.
Religion

Director of School: James C. Speckling
Degrees offered: B.A., M.A., Ph.D.

A central goal of the School of Religion has always been to help as many students as possible—whether or not they are majoring in religion—to gain an understanding of the history and literature of the religions of mankind and insight into the nature and meaning of the religious dimensions in human culture. Such understanding is not only valuable for its own sake, but it is essential for responsible participation in a religiously pluralistic American society and in a pluralistic world community. Many students at the University majoring in other areas elect courses in religion as part of their general education program, some elect religion as a second major.

An undergraduate major in religion provides a foundation for graduate and professional study in the field of religion, but it is oriented toward understanding more than it is oriented toward vocation. The School of Religion is not a theological seminary, and it does not prepare students for ordination, although a number of our undergraduate majors later attend theological seminaries well prepared for study in those schools leading toward professional careers in churches and synagogues. Other majors continue their academic study of religion toward the M.A. and Ph.D. degrees to become specialists in the study and teaching of religion as a basic dimension of human culture.

B.A. Program

For a major in religion, undergraduate students elect 24 semester hours of coursework in religion according to their own interests, provided they take some courses which give them a general acquaintance with the basic religious traditions one would encounter in the contemporary world. Students majoring in religion will also elect 11 hours in related courses in departments such as Anthropology, Art, Classics, History, Philosophy, Psychology, and Sociology. These courses should be selected with the approval of the major advisor. The advisor must approve the foreign language submitted by the student to meet the two-year requirement for the B.A. degree.

Honors Program

Religion majors eligible for the Liberal Arts Honors Program may obtain a degree with Honors through satisfactory completion of Honors essays during the senior year.

Graduate Programs

The School of Religion seeks to prepare a select and limited number of graduate students to become specialists in the study and teaching of religion. Graduate study is offered in five areas, including 13 fields, as follows:

Courses Primarily for Graduates

Religious Problems or cr. 3-7.00

104:220 Seminar: Administration of Religion 3 s.h.

Problems of administration, supervision and programming in religious organizations and agencies. Historical and philosophical development of attitudes toward leisure and recreation, recreational program patterns, current trends and techniques. Experiences for seniors majoring in religious education. Evaluation of a special project approach to therapeutic recreation in special settings such as psychiatric, physically handicapped, mentally retarded, penal, correctional, etc. Students engage in field experience carrying out studies in activity therapy programs.

104:235 Seminar: Camping cr. 3-7.00

Special lecture series for various types of group experiences—development of policies and recreation facilities. Prerequisites: 104:254 Design and Maintenance of Recreation Facilities or cr. 3-7.00

104:254 Design and Maintenance of Recreation Facilities or cr. 3-7.00

Principles, terminology, standards of design, planning, construction, maintenance, and operation of areas and facilities for recreation and physical education.
Area A: Jewish and Christian Scriptures
1. Old Testament
2. New Testament
3. Post-Biblical Judaism
Area B: History of Christianity
4. Early Church (to 500)
5. Medieval (since 500)
6. America
Area C: Theology and Ethics
7. Jewish
8. Roman Catholic
9. Protestant
Area D: History of 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 not less than 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. In each of the three areas, the student will be responsible to only one faculty member who will advise him or her on courses in that area; the three faculty members together will constitute the student's advisory committee. By the second semester in this program, a student should have decided on areas of concentration. By this time, too, the committee should have been formed.

This committee conducts the master's examination, written toward the end of a 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 a change in 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 advisor will set up a three-member committee for comprehensive examinations.

The committee will determine four 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 12 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 utilized 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 advisors 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 relevant materials will be conducted by a committee of five or more members.

A student whose grade-point average in graduate study at Iowa 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. Some of these faculty are so closely related that they are listed below as affiliated staff. 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: Belz, David; Block, David; Bork, Howard; Bush, Myron; Schaeffer, Roy; Schlemmer, R. W. Structure: Bennett, Clarence; Cooper, John; DeLancey, John; Farnsworth, Charles; Gay, Walter; Holman, John; Kass, Alfred; Kellar, Charles; Klopfer, Frederick; Lauer, Charles; McWhorter, William; Palmer, William; Peck, Charles; Picken, Charles; Rice, Robert; Saylor, Robert; Schaeffer, R. W.; Sherrill, Clifton; Shibley, William; St. John, Charles; Sturkie, Robert; Talcott, David; Titus, Charles; Tozer, Charles; Underwood, Charles; Walker, Charles; West, Charles; White, Charles; Willard, Charles; Wilson, Charles; Wood, Charles; Young, Charles; Zahn, Charles.

Associate professors: Baker, Paul; Bartlett, John; Belz, David; Block, David; Bork, Howard; Bush, Myron; Schaeffer, Roy; Schlemmer, R. W.; Structure: Bennett, Clarence; Cooper, John; DeLancey, John; Farnsworth, Charles; Gay, Walter; Holman, John; Kass, Alfred; Kellar, Charles; Klopfer, Frederick; Lauer, Charles; McWhorter, William; Palmer, William; Peck, Charles; Picken, Charles; Rice, Robert; Saylor, Robert; Schaeffer, R. W.; Sherrill, Clifton; Shibley, William; St. John, Charles; Sturkie, Robert; Talcott, David; Titus, Charles; Tozer, Charles; Underwood, Charles; Walker, Charles; West, Charles; White, Charles; Willard, Charles; Wilson, Charles; Wood, Charles; Young, Charles; Zahn, Charles.

Assistant professors: Belz, David; Block, David; Bork, Howard; Bush, Myron; Schaeffer, Roy; Schlemmer, R. W.; Structure: Bennett, Clarence; Cooper, John; DeLancey, John; Farnsworth, Charles; Gay, Walter; Holman, John; Kass, Alfred; Kellar, Charles; Klopfer, Frederick; Lauer, Charles; McWhorter, William; Palmer, William; Peck, Charles; Picken, Charles; Rice, Robert; Saylor, Robert; Schaeffer, R. W.; Sherrill, Clifton; Shibley, William; St. John, Charles; Sturkie, Robert; Talcott, David; Titus, Charles; Tozer, Charles; Underwood, Charles; Walker, Charles; West, Charles; White, Charles; Willard, Charles; Wilson, Charles; Wood, Charles; Young, Charles; Zahn, Charles.
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 prepares an officer for the 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 this background, professional skills, ethics, standards and duties, and stress military leadership and management. Cadets who are commissioned serve one tour on active duty at a current starting salary of at least $4,640 per year. They serve in any one of 13 Army branches or 48 Air Force functional areas. That commissioned military service is invaluable leadership experience in other fields is borne out by the fact that a reasonably large number of men in key leadership positions of government and industry have ROTC backgrounds.

The ROTC 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 (waivable).

The Two-Year Program

The ROTC curriculum normally spans five years; it can be completed in three or four and a half by corps-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 A-Team 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 earns 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 $10 per month 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 commissioned.

Cadets using National Defense Education Act loans have 12.5 percent of the loan canceled for each of the first few years of commissioned 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-
ple their education and go on active duty as doctors or dentists. Cadets who pass a state bar examination can apply for a commis-
sion 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 earn the two-year program and receive all financial
benefits except scholarships.

Special Activities
The military departments sponsor several special activities
which contribute to cadet and university life. The Pershing Rif-
flies, Black Berets and Arnold Air Society are military fraternal
organizations engaging in military inter-collegiate competition
and service activities. The Co-odiers and Angel Flight are wom-
ens’ organizations auxiliary to Pershing Rifles and Arnold So-
ciety and participates with them in many activities. The depart-
ment also sponsors a small-bore rifle club.

ROTC cadets compete for individual national and local
awards presented for outstanding achievement in leadership,
academic, citizenship, athletics and military proficiency. These
awards are formally presented at appropriate ceremonies. (See
“Awards, Honors and Prizes.”)

The departments sponsor 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: Lieut. Col. Raymond B. Morehouse
The normal sequence of courses required for successful comple-
tion of the Air Force ROTC program includes courses from
other departments in communication skills, history and political
sciences. Variant the program outlined below may be ap-
proved by the Department head.

First Year
23:11 Aerospace Military Studies 1
23:96-97 APROTC Training 0
10.1, 2 or 3 Rhetoric Skills 4

Second Year
30:13 Introduction to World Politics 4
23:96-97 APROTC Training 0
23:11 Aerospace Military Studies 1

Cadets who pass qualification tests and are selected on a com-
petitive 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

Third Year
23:81 Growth and Development of Aerospace 3
23:96-97 APROTC Training 0

Third-year cadets required to take one of select group of 100-
level history or political science courses during second semester

Fourth Year
23:93-94 Air Force Leadership and Management 6
23:97 APROTC Training 0
23:50 Flight Instruction 2

Flight ground school course required for fourth-year cadets in
flight instruction program.

Special Facilities and Equipment
Throughout the academic year, classroom instruction is supple-
mented 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 flows, by APROTC
instructors. Briefings and tours by base personnel with further
explanation by the APROTC 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 APROTC instructor duty. Normally at
least one officer is pilot or navigator rated. All APROTC instruc-
tors must complete the comprehensive Air Force Academic In-
structor Course.

Unique Program Attracts
Before a cadet begins his junior year of Air Force ROTC, he
attends a four- or six-week summer 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 crew indoctrination, physical training,
organization and function of an Air Force base, career orienta-
tion, small arms familiarization and first aid.
Staff: AS-100 and AS-200 and flight program instructor Major
Corder; commandant of cadre and AS-400 instructor Captain
Brown; AS-300 instructor Captain Woodchair

Military Science
Department Head: Colonel Robert R. Kubly
Variations in the following normal military science curriculum
may be permitted by the Department head. Only cadets may
take courses above 23:90

First Year
24:10-20 Fundamentals of Leadership and Management 3
24:98-99 Leadership Laboratory 0

Second Year
23:34-44 Applied Leadership and Management 4
23:98-99 Leadership Laboratory 0
Cadets passing qualification tests and selected on a competitive basis may enter advanced courses:

Third Year
2315-58 Advanced Leadership and Management 5
2328-99 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 pay approximately $600 or $600 and travel expenses.

Fourth Year
2347-88 Theory and Dynamics of the Military Team 4
2348-99 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 gazing, 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 Cogsville Reserve Training Area, two farms near Iowa City, and Pilchuck Park for practical field problems. A variety of military equipment such as helicopters, PM radios and mortars 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 post-graduate 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 commanders of cadets Lt. Col. Collins (field artillery); chief instructor of advanced course Maj. Broch (infantry); advanced course instructors Maj. Prall (corps of engineers); Capt. Mitchell (acquair); chief instructor of basic course Capt. Jackson (artillery); basic course instructor Capt. Komar (field artillery)

Aerospace Military Studies Courses
General Military Education Program
Freshman Year
23AC1 The United States Air Force 1 a.h.
First semester: designed to acquaint beginning students with the forces of Air Force life and the role of general instructors in the personal development and growth of Air Force, as well as students use of offensive and defensive forces and employment of special purpose forces throughout the world.

Sophomore Year
Second semester: includes study of U.S. defense alliances, review of defense policies, defense buildup and the question of deterrence. Emphasis is on general educational and critical thinking.

23AC14 Air Force Training 0 a.h.
First semester: provides the tools of practical and staff leadership experience by serving as a technical officer or by serving as an assistant instructor.

23AC15 Air Force Training 0 a.h.
Second semester: serves as an instructor.

Professional Officer Course Program
Junior Year
23AC21 Growth and Development of Aerospace Power 3 a.h.
First semester: consists of survey of development of air power in United States, contemporary aerospace power, airpower, space operations, operations designed to developing communications skills needed by junior officers: prerequisites: 23AC31 or equivalent, as determined by staff or registration, plus successful completion of Air Force ROTC summer field training program or consent of instructors.

Senior Year
23AC22 The Professional Officer 3 a.h.
First semester: provides the tools of practical and staff leadership experience in the form of a professional officer, to include theoretical, practical, legal aspects of management in the general leadership of units and groups. Emphasis is on general educational and critical thinking.
23AC23 The Professional Officer 3 a.h.
Second semester: military management, finance, principles, tactics, preparation for service duty: prerequisites: same as 23AC22.
23AC24 Aerospace Military Studies Flight Instruction 3 a.h.
Ground school phase includes FAA Regulations, flight computing, navigation and weather. Flight phase encompasses 50 1/2 hours of flight instruction by Iowa City Flying Service. Course completion may qualify cadets for private pilot's license. Required for qualified platoon cadet AFROTC cadet, ground school phase open to other students with consent of instructor

Military Science Courses
2310 Military Science 1 a.h.
Introduction to basic of military role, organization and development of U.S. forces, plus introduction to role of a cadre, including responsibilities and professional ethics, both as a cadre and as a member of an individual and spatial forces in the United States Armed Forces, plus introduction to roles and spatial aspects of 2320 manned In order to permit cadets to ROTC training semester to fit in schedule to complement the discipline.
2320 Military Science 1 a.h.
Combination of 2310
2324 Terrain Analysis 3 a.h.
Use of maps and aerial photos In analysis of terrain for military operations taught jointly with Geology Department.
Reserve Officers Training Corps (ROTC)
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:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>41:105-106</td>
<td>Second Year Russian</td>
<td>8 s.h.</td>
</tr>
<tr>
<td>41:112-113</td>
<td>Third Year Russian</td>
<td>8 s.h.</td>
</tr>
<tr>
<td>41:113</td>
<td>Advanced Composition and Conversation</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>41:151</td>
<td>Russian Literature in Translation</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>41:152</td>
<td>Russian Literature in Translation</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>41:171-172</td>
<td>Readings in Soviet Literature</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>41:191</td>
<td>Russian Civilization</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

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 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:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>41:113-114</td>
<td>Advanced Composition and Conversation</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>41:211-212</td>
<td>19th Century Russian Literature</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>41:231</td>
<td>Soviet Literature</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>41:249</td>
<td>Prospects, Research Methods</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>41:261</td>
<td>History of the Russian Language</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>41:430</td>
<td>Old Church Slavonic</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

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 in 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 undergraduates 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 language 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 electronic 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 qualified students in seeking 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 program with discussions, regular reports and a seminar paper comprise each work unit of two semester hours. Students may take up to eight semester hours of Honors credit. A comprehensive examination is given in the senior year.

Staff: professors Scribner, Luxembourg; assistant professor Werner; instructors Parrott, Oosten

Courses for Undergraduates and Graduates

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>41:101</td>
<td>Elementary Russian</td>
<td>4 h.</td>
</tr>
<tr>
<td>41:102</td>
<td>Elementary Russian</td>
<td>4 h.</td>
</tr>
<tr>
<td>Prerequisite: 41:101 or equivalent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41:103</td>
<td>Second-Year Scientific Russian</td>
<td>4 h.</td>
</tr>
<tr>
<td>Emphasis on reading scientific and technical Russian material; for students, especially those majoring in sciences, who seek primarily to develop reading ability for scientific and technical purposes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41:104</td>
<td>Second-Year Scientific Russian</td>
<td>4 h.</td>
</tr>
<tr>
<td>Prerequisite: 41:102 or equivalent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41:156</td>
<td>Second-Year Russian</td>
<td>4 h.</td>
</tr>
<tr>
<td>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: 41:102 or equivalent</td>
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<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>41:199</td>
<td>Second-Year Russian</td>
<td>4 h.</td>
</tr>
<tr>
<td>Prerequisite: 41:105 or equivalent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41:197</td>
<td>Supplemental Russian Reading</td>
<td>2 h.</td>
</tr>
<tr>
<td>Prerequisites: 41:105 or equivalent and consent of instructor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41:188</td>
<td>Special Readings</td>
<td>2 or 3 h.</td>
</tr>
<tr>
<td>Prerequisite: 8 semester hours of language instruction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41:111</td>
<td>Intermediate Composition and Conversation</td>
<td>4 h.</td>
</tr>
<tr>
<td>41:113</td>
<td>Advanced Composition and Conversation</td>
<td>3 h.</td>
</tr>
<tr>
<td>41:114</td>
<td>Advanced Composition and Conversation</td>
<td>3 h.</td>
</tr>
</tbody>
</table>

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<tr>
<th>Course Code</th>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>41:166</td>
<td>Teaching Methods, Russian</td>
<td>3 h.</td>
</tr>
<tr>
<td>Offered only in fall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41:182</td>
<td>Russian Pronunciation</td>
<td>1 h.</td>
</tr>
<tr>
<td>41:195</td>
<td>Russian Pronunciation</td>
<td>1 h.</td>
</tr>
<tr>
<td>41:191</td>
<td>Russian Literature in Translation (1800-1880)</td>
<td>3 h.</td>
</tr>
<tr>
<td>Conducted in English, same as 41:112</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41:192</td>
<td>Russian Literature in Translation (1880-1917)</td>
<td>3 h.</td>
</tr>
<tr>
<td>Conducted in English, same as 41:112</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41:193</td>
<td>Tolstoy</td>
<td>3 h.</td>
</tr>
<tr>
<td>Conducted in English</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41:194</td>
<td>Dostoevsky</td>
<td>3 h.</td>
</tr>
<tr>
<td>Conducted in English</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41:171</td>
<td>Readings in Representative Russian Literature</td>
<td>3 h.</td>
</tr>
<tr>
<td>Conducted in Russian, prerequisite 41:112 or equivalent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41:172</td>
<td>Readings in Representative Russian Literature</td>
<td>3 h.</td>
</tr>
<tr>
<td>Conducted in Russian, prerequisite 41:112 or equivalent, certificates of 41:111, 41:191, 41:192, 41:193, 41:194</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41:181</td>
<td>Readings in Soviet Literature</td>
<td>3 h.</td>
</tr>
<tr>
<td>Conducted in English</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41:191</td>
<td>Russian Civilization</td>
<td>3 h.</td>
</tr>
<tr>
<td>Conducted in English</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41:193</td>
<td>Honors Program Russian</td>
<td>3 h.</td>
</tr>
<tr>
<td>May be repeated to maximum of eight semester hours, prerequisite consent of Department</td>
<td></td>
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</tr>
</tbody>
</table>

Courses Primarily for Graduates

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>41:201</td>
<td>19th-Century Russian Literature</td>
<td>3 h.</td>
</tr>
<tr>
<td>41:202</td>
<td>Old Russian</td>
<td>3 h.</td>
</tr>
<tr>
<td>41:111</td>
<td>19th-Century Russian Literature</td>
<td>3 h.</td>
</tr>
<tr>
<td>41:112</td>
<td>19th-Century Russian Literature</td>
<td>3 h.</td>
</tr>
<tr>
<td>Continuation of 41:201 but may be taken as independent unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41:150</td>
<td>Russian Drama</td>
<td>3 h.</td>
</tr>
<tr>
<td>41:121</td>
<td>Soviet Literature</td>
<td>3 h.</td>
</tr>
<tr>
<td>41:144</td>
<td>Literature of Civilization</td>
<td>3 h.</td>
</tr>
<tr>
<td>41:142</td>
<td>Russian Literature</td>
<td>3 h.</td>
</tr>
<tr>
<td>41:191</td>
<td>Soviet Literature</td>
<td>3 h.</td>
</tr>
<tr>
<td>41:150</td>
<td>Seminar: Serapionov, Lermontov</td>
<td>2 or 3 h.</td>
</tr>
<tr>
<td>41:193</td>
<td>Seminar: Tolstoy</td>
<td>2 or 3 h.</td>
</tr>
<tr>
<td>41:194</td>
<td>Seminar: Pushkin</td>
<td>2 or 3 h.</td>
</tr>
<tr>
<td>41:195</td>
<td>Seminar: Turgenev, Goncharov</td>
<td>2 or 3 h.</td>
</tr>
<tr>
<td>41:196</td>
<td>Seminar: Emile Litovrel</td>
<td>2 or 3 h.</td>
</tr>
<tr>
<td>41:307</td>
<td>Seminar: Turgenev, Goncharov</td>
<td>2 or 3 h.</td>
</tr>
<tr>
<td>41:301</td>
<td>History of the Russian Language</td>
<td>3 h.</td>
</tr>
<tr>
<td>41:383</td>
<td>Old Church Slavonic</td>
<td>3 h.</td>
</tr>
<tr>
<td>41:381</td>
<td>Special Work</td>
<td>3 h.</td>
</tr>
<tr>
<td>41:315</td>
<td>Reader's Thesis</td>
<td>3 h.</td>
</tr>
</tbody>
</table>

Science Education

Coordinator: Robert E. Vega

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 students enrolled. There is concern for science instruction at all
academic level—from kindergarten through graduate programs—as well as research in science education. The Department is the center for several institutes on the campus, curriculum committee, and professional societies.

Current research being carried out 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 wish 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 90:128 Meeting of Science and 90:130 History of Science must be included in the 18 semester hours, unless equivalent coursework was 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 their education beyond the master’s degree level. 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 credit and is centered in an area of science or science education, and may be counted as part of the 20 semester hours of science credit 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 from the fields in which the student is concentrating in 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 the faculty of the graduate college.

Specialist Degree

The Ed.S. is an intermediate degree between the master’s and the Ph.D. programs. It is recommended for supervisors (state, regional or local) as well as for instructors in community colleges and/or 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 credits. The comprehensive consist 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 graduating committee is composed of the science education advisor, 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 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 graduate course in that area. At the time of the degree, each candidate will have at least the equivalent of a master’s degree in education as well as 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: bio-geological 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
Understanding the major in social studies education involves understanding the subject matter, teaching methodologies, and the challenges faced in the field. The program at B.A., M.A., and Ph.D. levels is designed to prepare educators for careers in elementary, secondary, and higher education settings. The curriculum is designed to provide a comprehensive understanding of social studies concepts, including history, economics, geography, and civics. Students in the program are encouraged to engage in research, develop critical thinking skills, and create lesson plans that are culturally responsive and inclusive. The program prepares educators to teach in diverse educational settings, from urban to rural, and to address the needs of students from varied backgrounds.

The program emphasizes the importance of understanding the historical and cultural contexts of social studies content. Students are encouraged to explore the intersections of race, gender, and class, and to develop strategies for teaching in diverse classrooms. The program also provides opportunities for students to engage in community-based research and to collaborate with local schools and organizations.

The program offers a variety of courses that cover a range of topics, including world history, U.S. history, economics, and political science. Students are also required to complete a thesis or dissertation, which allows them to explore a specific area of interest in depth. The program provides a strong foundation for careers in education, policy analysis, and social work, and prepares graduates for leadership roles in educational settings.

Social Studies Education
Chairman: John He. Degrees offered: B.A., M.A., Ph.D.

Undergraduate Program
The major in social studies introduces students to the social sciences on our campus. Studying in this program, you will be prepared for careers in secondary education, policy analysis, and social work. The program offers a strong foundation in social sciences, history, and political science, and prepares you for a variety of career paths.

The program provides opportunities for hands-on learning, such as internships and research projects, and encourages you to develop critical thinking skills. You will engage in case studies, debates, and discussions with leading scholars in the field.

The program offers a range of courses, including world history, U.S. history, economics, and political science. You will have the opportunity to explore a variety of topics, such as the role of social movements in shaping policy, and the impact of globalization on economic systems.

The program requires you to complete a thesis or dissertation, which allows you to explore a specific area of interest in depth. The program provides a strong foundation for careers in education, policy analysis, and social work, and prepares you for leadership roles in educational settings.

Social Studies Education
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 alternative formal classes. There is no separate Honors Program in social studies. Students who qualify are encouraged to do their Honors work in the social sciences 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 those who have a 2.5 grade-point average in all college work undertaken in the cooperating departments.

Graduate Programs

Master of Arts

The interdepartmental 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 38 semester hours may be distributed in one of two ways.

In Plan A the candidate does 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 does work in two of the seven cooperating social science departments and in courses offered by the College of Education. 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.

Graduate students in the 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 2.5 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 teacher 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 plan 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 60 and 75 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, said work, and laboratory and computer experience. Seminar and advanced work in courses numbered 300 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 candidate’s committee.

The research problem may be in either of the two academic.
Social Work

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 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 advisers 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 schools in curricular revision.

Staff: Professor Haefner; Associate Professor Fisch; Assistant Professor Omlo
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 degree consists largely of offerings in cooperating faculties—anthropology, economics, geography, history, political science, psychology and sociology—and the College of Education. However, credit for advanced degrees are encouraged to take one or more courses listed in the area of social studies education.

62/511 Individual Instruction in Social Studies Education or arr. Individualized master’s field studies and individual program, focus in history and social sciences or in problems of professional education; may be repeated; prerequisites: permission of instructor

62/512 Instruction in Social Studies Education or arr. Reading and discussion on significant developments in history, social sciences and social education; independent study; reduced in number of credit hours, subject to approval 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 purposes 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 children 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 broader 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 adviser 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:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>30:001</td>
<td>Introduction to American Politics or 30:100 American Political System</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>31:1</td>
<td>Elementary Psychology or 31:3 General Psychology</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>34:1</td>
<td>Introduction to Sociology: Principles</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>6E:1</td>
<td>Principles of Economics or 6E:2 or 6E:106</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>42:168</td>
<td>The Field of Social Work</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>42:171</td>
<td>Social Welfare Policy I</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>42:176</td>
<td>Introduction to Social Work Methods</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>42:193</td>
<td>Field Experience</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>
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.

A. Social Science
   Economics
   Geography
   Political Science
   Psychology
   Sociology
   Anthropology

B. Humanities
   American Civilization
   English
   European Literature and
   History
   Philosophy
   Religion

For most students majoring in social work, there is considerable room for electives in social work as well as in other departments. In making these selections, students can contact the School of Social Work for a list of recommended courses.

The following electives are offered in social work:

42:062 Elementary Statistical Concepts 3 s.h.
42:131 Human Behavior in the Social Environment 1 4 s.h.
42:132 Human Behavior in the Social Environment II 3 s.h.
42:191 Individual Study arr. 1–3
42:192 Honors in Social Work arr. 2–3

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-directed 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 conditions 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 choices 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 fall 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 requirements and coursework. Educational Centers are maintained in Iowa City and Des Moines. After the full semester of the first year, classes meet in these Centers and each student attends one or more of his or her practicum placement requirements.

The graduate curriculum is organized into four interdependent sequences of courses: Social Work Practice, Social Welfare Policy, Human Behavior in the Social Environment and Practice. 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 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 research 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 each in the following major 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 the program.

Upon faculty recommendation, a student who has completed a clear 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 encouraged; admissions may have to be closed shortly after January 1.
Courses Primarily for Undergraduates

42:502 Elementary Statistical Concepts 3.0 h.

Rationale and use of various descriptive statistical models, including measures of central tendency, variability and correlation. Introduction to selected inferential statistical concepts and social research methods.

42:505 The Field of Social Work 4.0 h.

Social welfare as social institution; historical development; settings of social work practice; problems of mental health; none of Sociology 30:080.

42:178 Introduction to Social Work Methods 4.0 h.

Knowledge of social current issues, development of social work techniques; professional skills of social work practice; possibility of social work; awareness of the importance of social work; relationships of social workers; conducting of group interviews; social work research; field experience 42:174; social work practice.

42:180 Field Experience 3.0 h.

Supervised observation and experience with activities of selected social welfare agencies and organizations; assessment of group activities; supervision provided to groups.

42:191 Individual Study 3.0 h.


42:211 Social Policy 3.0 h.

The development, implementation, and evaluation of social policy; the impact of social policy on individuals, groups, and societies; the social welfare state; the relationship of social policy to social problems; the role of social welfare agencies in implementing social policy.

Courses for Graduate Students

42:217 Social Systems and Organizations 3.0 h.

Examines the structure and functions of social systems and organizations; the role of social systems and organizations in the socialization process; the impact of social systems and organizations on individual and group behavior; the relationship of social systems and organizations to social problems; the role of social welfare agencies in implementing social policy.

42:218 Social Welfare Policy 3.0 h.

The development, implementation, and evaluation of social policy; the impact of social policy on individuals, groups, and societies; the social welfare state; the relationship of social policy to social problems; the role of social welfare agencies in implementing social policy.

42:219 Social Policy and Social Problems 3.0 h.

The development, implementation, and evaluation of social policy; the impact of social policy on individuals, groups, and societies; the social welfare state; the relationship of social policy to social problems; the role of social welfare agencies in implementing social policy.
Sociology

Department Chairman: James I. 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 34.12-1 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 either 25.103 Introduction to Logic or 25.104 Introduction to Philosophy of Science, either 22M-2 Mathematical Techniques I and 22M-30 Elementary Functions, or 22C-7 Intermediate Calculus with Analytic Geometry and 22C-17 Computing with PL/I; and 226-2 Elementary Probability and Statistics I and 226-25 and Calculus I-I may be taken 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 wish 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 34-97 Honors Research in their programs. Each candidate for Honors will have an Honors advisor and will 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 areas 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 Examination.)

The Master of Arts degree in sociology may be obtained in a 30-hour program with thesis or in a 36-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 wish to obtain a terminal degree 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, 34-202 Sociological Theory, 34-314 Elementary Statistics and Data Analysis, and 34-215 Sampling, Measurement and Statistical Techniques. These four required courses must be passed with a grade of B or better.

The Doctor of Philosophy degree in sociology is awarded to candidates who have completed approximately 90 hours of work at the graduate level, pass a post-M.A. set of courses in methodology and statistics (34-24 Intermediate 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 on one major and one minor area chosen from among the areas currently represented on the faculty. Examples of current areas are social psychology, criminology, sociology, 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 doctoral candidates should carefully examine this statement.

The M.A. with Concentration in Criminology

The Master 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 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 Punishment 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 of an M.A. degree in Law Enforcement and Corrections without thesis. Students who obtain this degree will be qualified for a variety of positions in law enforcement and corrections. 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 law enforcement 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 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:

34:1 Elementary Psychology
34:163 Abnormal Psychology
34:1 Introduction to Sociology: Principles
34:214 Elementary Statistics and Data Analysis
34:215 Sampling, Measurement and Observational Techniques
34:120 Principles of Social Psychology
34:126 Collective Behavior
34:340 Criminology
34:341 Juvenile Delinquency

After the student has completed the prescribed coursework at the required level of performance, he or she must pass comprehensive examinations on crime, justice, corrections and prevention.

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 (CRIB), a data archives unit and the Iowa Urban Community Research Center (IUCRC). CRIB 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 interactional process recording equipment.

The data archives unit houses the results of numerous survey studies which are made available for teaching and research purposes in faculty and students. IUCRC was established in 1958 and maintains a research library, data bank and laboratory.

Staff: professors Caldwell, McCard, Price, Saunders, Staff, Shannon, Willson; associate professors Couch, Pope, Stratton; assistants Fox, Kim, Roberts, Watling, Woodworth; instructors Klein, Lawyer, Sharpe; technicians Jacob, 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. Biologically based approach to analysis and explanation of culture and social organization; may be followed by 34:2; may be taken in partial fulfillment of social science requirement.

34:10 Introduction to Social Science-Soc. Problems 4 s.h. 4 credits; analysis of selected topics in sociological perspective; prerequisites: 34:1, may be taken in partial fulfillment of major, social science area requirement.

34:18, 34:19 Theory, Research and Methodology b-a.s.
Year-long introduction to basic concepts, theoretical thinking, statement of research questions, design and execution of research projects; courses counted toward degree in research project, seminar correlated with design of research project, including problems of sampling and measurement; evaluation of research data, and interpreting research findings: elementary methods of data collection and presentation of statistical data, measures of central tendency and variability; and meaning of association and statistical significance; prerequisite: 34:1, 34:2 and declared major in sociology.

34:38 Individual Study 2 to 4 s.h.

34:48 Honors Seminar 2 s.h.

For undergraduate majors with superior academic records; selected topics and methodological issues; prerequisite: senior standing and consent of instructor.

34:67 Honors Research 2 s.h.

For students planning special research projects, under honors chairman; chosen after consultation with Honors advisor; may be repeated.
of historical, survey and symbolic types of method and analytic praxis: graduate standing 3 x h.

52:265 Social Stratification 3 x h.

Historical and comparative approach to social stratification, through examination of major systems of social stratification and impact on political order; emphasis on understanding the concept of social stratification as social means of political order and object of theoretical and empirical social scientific analysis: graduate standing 3 x h.

52:266 Social Control 3 x h.

Methodological techniques and issues in study of social control; prerequisites: 52:253 or consent of instructor 3 x h.

52:267 Social Problems 3 x h.

Theory and research on health inequalities in modern society: social stratification of disease: sociological components in treatment, hospital organization and medical practice, sociology of mental illness: prerequisites: graduate standing and consent of instructor 3 x h.

52:268 Medical Sociology 3 x h.

Internal theoretical and substantive issues in social stratification: prerequisites: 52:253, 52:252 or consent of instructor 3 x h.

52:269 Seminar: Social Stratification 3 x h.

permission of instructor 3 x h.

52:270 Seminar: Medical Sociology 3 x h.

Research and theory on health inequalities in modern society: social stratification of disease: sociological components in treatment, hospital organization and medical practice, sociology of mental illness: prerequisites: graduate standing and consent of instructor 3 x h.

52:271 Seminar: Prejudice and Intergroup Relations 3 x h.

Deviations in behavior related to group formation, research on social standards, discrimination, green light, entregroup, intervention, preference, inhumanity and intergroup behavior: prerequisites: graduate standing and consent of instructor 3 x h.

52:272 Seminar: Deviant Behavior 3 x h.

Research and theory on health inequalities in modern society: social stratification of disease: sociological components in treatment, hospital organization and medical practice, sociology of mental illness: prerequisites: graduate standing and consent of instructor 3 x h.

52:273 Seminar: Theory and Research is the Family 3 x h.

Examination of contemporary theory and research in family, emphasis on theory building and research design: prerequisite consent of instructor 3 x h.

52:274 Seminar: Community Survey 3 x h.

Methodological techniques and issues in study of social control: prerequisites: 52:253 or consent of instructor 3 x h.

52:275 Seminar: Social Mobility 3 x h.

Role of institutions in work to modern urban-industrial society: sociological theory and research methodology as related to organized structure: recent empirical studies: prerequisites: graduate standing and consent of instructor 3 x h.

52:280 Seminar: Selected Topics in Family Sociology 3 x h.

Internal theoretical and methodological issues: prerequisites: advanced graduate standing and consent of instructor; may be repeated 3 x h.

Community and Population

52:170 Population and Urbanism 3 x h.

Factors and processes determining population size, composition and distribution; relations of population to social organization and urban society; recent trends in population with resulting problems: policies and programs: prerequisite: 52:171 The Urban Scene 3 x h.

52:171 Sociological perspective of origins and spread of urban settlements in world: analysis of major urban social institutions, historical development of cities and urban forms; their place in modern society, both Western and non-Western: prerequisites: 12:151 or consent of instructor 3 x h.

52:174 World Population Problems 3 x h.

Process of urbanization and conditions of urban life: nature of urban social relations: organization of city life, urban ecological patterns and demographic conditions, and regional influence of micropolitical concern: prerequisites: 52:174 World Population Problems 3 x h.

52:175 Problems of Urbanization 3 x h.

World population needs and pressures; their causes and consequences, by current and past world areas; urbanization and religion and population phenomena: standards of living and technological change: cultural contrasts in migration patterns: city as a product of societal change: prerequisites: 52:174 World Population Problems 3 x h.

52:176 Techniques of Population Analysis 3 x h.

Obtaining information from population data; research procedures and their nu-
sances; selected applications to world and national demographic data: prerequisites: 52:170 or its equivalent 3 x h.

52:177 Problems of Community Organization 2 or 3 h.

Formal organizations, informal groups, voluntary associations and religion in urban pattern of contemporary life: prerequisite: 52:174 3 x h.

52:275 Seminar: Community Research 3 x h.

Point of view of human ecology and selected empirical applications: implications for a variety of social organization processes in general: prerequisite: 52:175 3 x h.

52:276 Seminar: Community Research 3 x h.

Development of phase of research and design for community study, referred to project phase of Iowa Urban Community Research Center: prerequisite: consent of instructor 3 x h.

52:274 Seminar: Community Survey 3 x h.

Examination of community study project, in consultation with activities of Iowa Urban Community Research Center: prerequisite consent of instructor 3 x h.

52:277 Seminar: Community Theories 3 x h.

Examination of theories of social order and exhibiting relevance to understanding of social processes: includes study of writings of Durkheim, Park, Radcliff, Werner, and others: prerequisite: graduate standing and consent of instructor 3 x h.

52:278 Seminar: Community Problems 3 x h.

Problems growing out of increase in urban population and relative decline in rural population: emphasis on Iowa and the Middle West: prerequisite: graduate standing and consent of instructor 3 x h.

Social Problems

52:180 Sociology of Aging 3 x h.

Aging: problems in old age, communications breakdown and changing value of society with respect to needs of elderly: prerequisite: 52:1 3 x h.

52:182 The Social Psychology of Alcohol Use and Community Problems 3 x h.

Social and cultural factors in delinquency and use of beverage alcohol: social psychological analysis: public definition and menaces to alcoholics: prerequisites: 52:180 3 x h.

52:183 Criminology 3 x h.

Prerequisites: 52:182 3 x h.

52:187 Juvenile Delinquency 3 x h.

Prerequisites: 52:182 3 x h.

52:189 Social Problems of Underdeveloped Areas 3 x h.

Prerequisites: 52:182 3 x h.

52:190 Race and Ethnic Relations 3 x h.

Prerequisites: 52:182 3 x h.

52:191 African Social Structure and Community Change 3 x h.

Prerequisites: 52:182 3 x h.

52:193 Seminar: Social Institution and Social Change 3 x h.

Prerequisites: 52:182 3 x h.

52:195 Seminar: Social Institution and Social Change 3 x h.

Prerequisites: 52:182 3 x h.

52:197 Seminar: Social Institutional and Social Change 3 x h.

Prerequisites: 52:182 3 x h.

52:199 Seminar: Social Institutional and Social Change 3 x h.

Prerequisites: 52:182 3 x h.

52:200 Seminar: Social Institution and Social Change 3 x h.

Prerequisites: 52:182 3 x h.

Individual Reading and Research Projects

52:283 Independent Study 3 or 6 h.

52:284 Research 3 or 6 h.

52:285 Thesis 3 or 6 h.

Spanish and Portuguese

Department Chairperson: Oscar Fernandez Degree Offered: B.A., B.A. Ed., M.A.

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 literature requirement for undergraduate majors in English and in Letters.

The Department works closely with the departments of Sociology 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 departments of Political Science, History and English.

Knowledge of foreign language and culture is indispensable in many career areas. Students majoring in Spanish or Portuguese 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- and second-semester courses interleave 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 35-157 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, or Honors essay in Spanish and/or 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 correlated 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 language 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 correlated 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 38 semester hours of coursework without thesis, including 35:208-209 Graduate Compositions 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 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 research must be designed to give the candidate a thorough knowledge of the history of the Spanish language, its literature and related civilizations, from medieval to modern times; provide adequate experience in a second Romance language and develop the student's capacity 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
and with a certain degree of distinction, the candidate will not be encouraged 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 shortwave radios, tape recorders, record players, soundproof recording rooms, two drill rooms with 68 dual-channel tape recorders providing a simultaneous master duplicator 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, "Tuercas 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 various 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), nineteenth-century Spain, the contemporary period, colonial Spanish America, Spanish America of the sixteenth and seventeenth centuries (including colonial innovations in theatre, poetry, and fiction), Portugal and Brazil. Seven of our faculty members also give their research primarily 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 Dorothy Carter, Fernando, Martínez-Barral, Ringo; professors emeritus David, associate professor Daniel De Mello, Douglas, González-Varon, Jeffers, Seiler; assistant professors Frank, Skinner, instructors Pacheco, Sanzio

Laboratory Director: Winston J. Reese

Spanish Courses

For Undergraduates

Primary for Undergraduates

For credit or quality points on an elective course if he or she has already completed a lower-level course for which the elementary course or its equivalent is a prerequisite.

3611 Intermediate Spanish 3 a.h.
3612 Advanced Spanish 3 a.h.
Prerequisites: 3611 or equivalent
3613 Advanced Conversational Spanish 4-2 a.h.
Prerequisite: 3611 or equivalent
3614 Modern Latin American Literature 3 a.h.
3614 Advanced Latin American Literature 3 a.h.
Prerequisite: 3611 or equivalent
3615 Spanish Prose 3 a.h.
3616 Spanish Prose 3 a.h.
May be used in conjunction with 3511; 3521, 3522; majors should take to complete minimum foreign language requirement.
3627 Third-Year Composition and Conversation 4 a.h.
Prerequisite: 3612 or equivalent
3628 Third-Year Composition and Conversation 4 a.h.
Prerequisite: 3512 or equivalent
3629 Third-Year Composition and Conversation 4 a.h.
Prerequisite: 3512 or equivalent
For Ph.D. language requirement and for others desiring reading knowledge, cannot be taken to fulfill minimum foreign language requirement.
3630 Special Work 1-3 a.h.
3631 Introductory Elementary Spanish 4 a.h.
3631 Reading Spanish 3 a.h.
For Undergraduates and Graduate
3631 Renaissance and Golden Age Literature 3 a.h.
Prerequisite: 3612 or equivalent
3632 Modern Spanish Literature 3 a.h.
Prerequisite: 3612 or equivalent
3633 Contemporary Spanish-American Fiction 3 a.h.
Prerequisite: 3612 or equivalent
3634 Spanish-American Poetry and Drama 3 a.h.
Prerequisite: 3612 or equivalent
3635 Fourth-Year Composition and Conversation 4 a.h.
Prerequisite: 3612 or equivalent
3636 Fourth-Year Composition and Conversation 4 a.h.
Prerequisite: 3612 or equivalent
3636 Contemporary Issues (a) Concept of Revolution in 20th-Century Spanish-American Writings 3 a.h.
3636 Contemporary Issues (b) Concept of Revolution in 20th-Century Spanish-American Writings 3 a.h.
3637 Introduction to Contemporary Latin American Novels and Short Story 3-4 a.h.
3637 Introduction to Contemporary Latin American Novels and Short Story 3-4 a.h.
3637 Spanish-American Workshop 2-4 a.h.
3638 Spanish-American Workshop 2-4 a.h.
3638 Spanish Civilization 2 a.h.
3638 Spanish Civilization 2 a.h.
3639 Syntax, Lexicography and Composition 2 a.h.
3639 Syntax, Lexicography and Composition 2 a.h.
3639 Honors Literature 3 a.h.
3639 Honors Literature 3 a.h.
3640 Honors Literature 3 a.h.
3640 Honors Literature 3 a.h.
3641 Honors Language 2 a.h.
3641 Honors Language 2 a.h.
3642 Honors Language 2 a.h.
3642 Honors Language 2 a.h.
3643 Introduction to Don Quixote 2 a.h.
3643 Introduction to Don Quixote 2 a.h.
3643 Greats in Spanish (open to undergraduate Spanish majors, and to undergraduates and graduates in other disciplines, with permission of instructor 2 a.h.
3643 Greats in Spanish (open to undergraduate Spanish majors, and to undergraduates and graduates in other disciplines, with permission of instructor 2 a.h.
3644 Romance Linguistics 2 a.h.
3645 Methods of High School Modern Foreign Languages 3 a.h.
Prerequisite: 3512 or equivalent; ordinarily offered as Section 79/15
3645 Language Laboratory Procedures 1-3 a.h.
3645 Language Laboratory Procedures 1-3 a.h.
Some as 3513, 3521 and 3511
3645 Language Laboratory Procedures 1-3 a.h.
3645 Language Laboratory Procedures 1-3 a.h.
Speech and Dramatic Art

Department Chairman: Samuel L. Beasler
Degree options: B.A., B.A. in English, M.F.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 the 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 Department’s students to better understand communication processes, and joint attempts to help improve abilities to communicate effectively, whether as directors or actors, community leaders, supervisors, participants in a group, filmmakers, broadcast technicians, playwrights, teachers, parents or friends.

The Department has six major divisions, whose emphases and distinctive courses are described below individually under the headings "Interdivision Courses," "Speech and Drama 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 adviser and graduate committee
- Successful completion of a qualifying examination and demonstrated competence in one’s research area
- Substantial scholarly dissertation

Staff: professors Becker, Bowes, Bryant, Cordier, Dihlanger, Hitchcock, MacCann, Schall, Sealey, Thayer; professoress seminally Baird, Gillette, Harrischer; associate professor Lewis; assistant professors Browstein, Catalano, Knauf, Ochs, Winnie; associate professor Adams, Andrew, Bradac, Dreyfus, Gillmerr, Hall, Kemp, Miller, Schiefer; instructor Blaser; readers Krul, Wockenfuss

Interdivisional Courses

3652 The Nature of Speeches Voice and Pronunciation 3 a.h.

3657 Oral Interpretation of Literature 3 a.h.
3659 Introduction to Principles and Practice of Reading Literature and Poetry to Students, Teachers, Laymen, Researcher, and Student for Growth and Understanding of Literary Works, Speeches, Films, and Radio and Television Programs 3 a.h.
3660 Honors in Speech and Dramatic Art 3 a.h. or cr. arr.
3665 Problems in Speech and Dramatic Art 3 a.h. or cr. arr.
Open to seniors and graduate students by permission
3651 Oral Interpretation of Literature II 3 a.h.

B.A. with Emphasis in Broadcasting and Film

Professors-in-Charge: Hugh V. Cordier; Dudley Andrew

Degrees offered: B.A.

Requirements for the Ph.D.

- 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 elect either broadcasting or film in their selection of elective courses, but minimal requirements will lead all students to exposure to his historical and evaluative courses in both broadcasting and film and to the production of materials for broadcast and film media.

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.
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Introduction to Research (3:300) 3 s.h.
Courses in theory and criticism 6 s.h.
Courses in theatre history 6 s.h.
Courses in dramatic literature 6 s.h.
Courses in theatrical production 9 s.h.
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 programs 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

39T:10 Shakespeare 3 s.h.
See also English 76.72, 76.75
39T:51 Drama in Western Culture 4 s.h.
See also core course 115.11; required of all dramatic arts majors
39T:52 Drama in Western Culture 4 s.h.
39T:61 Modern Drama 3, 4 s.h.
39T:91 Acting I 3 s.h.
39T:95 Acting Workshop 3 s.h.
39T:101 Stage Movement 2 s.h.
39T:103 Voice Laboratory 1 s.h.
39T:106 Movement Laboratory 1 s.h.
39T:107 Movement Laboratory 1 s.h.

Courses for Undergraduates and Graduates

One-hour concurrent registration required for all courses marked with asterisk (*). 125 is an average production activity for each hour of credit; may be taken only to complete minor courses.

39T:105 Dramatic Art Laboratory or, arr.
39T:106 Acting I 3 s.h.
39T:202 Advanced techniques and some study developing actor's psychological technique, courses to enhance concentration of emotions, observation, imagination and character development; 39T:203 Stage Movement 2 s.h.
39T:205 Voice Laboratory 1 s.h.
39T:206 Movement Laboratory 1 s.h.
39T:207 Individual attention to movement technique and experience; open only to students registered in 39T:205.

39T:506 Acting Workshop 3 s.h.
39T:507 Advanced techniques and some study developing actor's psychological technique, courses to enhance concentration of emotions, observation, imagination and character development; 39T:508 Stage Movement 2 s.h.
39T:509 Voice Laboratory 1 s.h.
39T:510 Movement Laboratory 1 s.h.
39T:511 Individual attention to movement technique and experience; open only to students registered in 39T:506.

39T:512 Stage Movement 2 s.h.

39T:101 Acting I 3 s.h.
39T:202 Advanced techniques and some study developing actor's psychological technique, courses to enhance concentration of emotions, observation, imagination and character development; 39T:203 Stage Movement 2 s.h.
39T:205 Voice Laboratory 1 s.h.
39T:206 Movement Laboratory 1 s.h.
39T:207 Individual attention to movement technique and experience; open only to students registered in 39T:205.

39T:506 Acting Workshop 3 s.h.
39T:507 Advanced techniques and some study developing actor's psychological technique, courses to enhance concentration of emotions, observation, imagination and character development; 39T:508 Stage Movement 2 s.h.
39T:509 Voice Laboratory 1 s.h.
39T:510 Movement Laboratory 1 s.h.
39T:511 Individual attention to movement technique and experience; open only to students registered in 39T:506.

39T:506 Acting Workshop 3 s.h.
Speech and Dramatic Art

37/111 Introduction to Theatrical Design 3 h.c.

Creative. of MS/110, prerequisite: MS/100; prior or concurrent registration in 37/112 is desirable.

37/112 Production Design 2 h.c.

Projects in scenic, costumes, lighting and property design; prerequisite: 37/111

37/113 Design Studios 3 h.c.

Individual assignments to develop ability to express sense of design; skills in design, set, and costume design; prerequisite: 37/112 and consent of instructor.

37/116 Survey of Visual Arts 3 h.c.

Major styles in decorative arts relative to production of plays, films, and museum exhibits, furnishings, interior and exterior materials and theatrical effects

37/117 Survey of Visual Arts 3 h.c.

Creative. of 37/116

37/118 Stagescraft 2 h.c.

Equipment, materials and procedures for preparation of theatrical scenery and lighting.

37/120 Advanced Sceneology Construction 2 h.c.

Advanced problems in construction, rigging, and shifting scenery

37/121 Lighting 2 h.c.

Theoretical and practical means for control of light on stage

37/122 Electrical Control in the Theatre 2 h.c.

Design, maintenance and use of electrical systems furnishing of sound, lights and active power in theater

37/123 Stage and Production Management 2 h.c.

Duties and organization of personnel in production personnel

37/124 Advanced Makeup 2 h.c.

Design and execution of stage makeup; three-dimensional makeup with provision for photographic, projected, agent of instruction

37/125 Makeup 2 h.c.

Lectures on scene-painting materials, dye layout and techniques of applying stage makeup at point source

37/130 Properties and Special Effects 3 h.c.

Design, construction and staging of theatrical properties; development and control of special effects.

37/131 Stage Costume Design 2 h.c.

Selection and use of fabric on stage

37/132 Stage Costume Draping and Drafting 2 h.c.

Pattern-making for stage costumes with particular reference to period dress

37/133 Stage Costume History and Headwear 2 h.c.

Consideration of theatrical headgear including hats, headdresses, masks and wigs

37/134 Stage Costume History 2 h.c.

History of dress in relation to stage costume

37/135 Stage Costume Theater 3 h.c.

Basic skills in theater

37/136 Advanced Stage Costume Design 2 h.c.

Readings and research leading to fundamental techniques for transforming dramatic values into form, consideration of director's media, arrangement of stage pieces and production properties; prerequisite: 37/101

37/142 Directing II 3 h.c.

Study of act of play directing with emphasis on director as interpretive artist; prerequisite: 37/141

37/143 Directing III 3 h.c.

Emphasis upon problems of style and genre in plays from modern repertoire; prerequisite: permission of instructor

37/145 Directing IV 3 h.c.

Emphasis upon problems of style and genre in plays from modern repertoire; prerequisite: permission of instructor

37/146 Theatre Techniques in Translation 3 h.c.

Directing and acting experience in rehearsal and performance of stage productions; prerequisite: 37/140 or permission of instructor

37/147 Children's Theatre and Creative Dramatics 3 h.c.

Theory and practice of creative dramatics for theater artist and classroom teacher

37/150 History of the Theatre or, arr.

May be repeated to maximum of six semester hours

37/155 Playwriting I 2 h.c.

Analysis and practice of playwright's techniques in today's theater; same as 67/105

37/156 Playwriting II 2 h.c.

Work in groups, with presentation and discussion of work by playwrights at advance level; prerequisite: 37/155 and consent of instructor; same as English 67/106

37/157 Playwrights Workshop 3 h.c.

Presentation and discussion of work by members; prerequisite: consent of Workshop staff; same as English 67/107

37/158 Greek Drama in Translation 3 h.c.

Same as Classics 156/157 and 158/159

37/159 Human Drama in Translation 3 h.c.

Same as Latin 156/157 and 158/159

37/161 Medieval Drama 3 h.c.

Biblical and religious drama of Europe from tenth century to close of Medieval...
Speech and Dramatic Art

387.621 Seminar: Elizabethan Theatre History 3 cr.
Study of plays, courts, methods and problems of historical research; same as English 4313.
387.622 Seminar: Theatre History 3 cr.
Subject matter varies.
387.623 Seminar: Dramatic Literature 3 cr.
Subject matter varies.
387.624 Seminar: Dramatic Literature 3 cr.
Subject matter varies.
387.625 Seminar: Dramatic Theory and Criticism 3 cr.
Developing theories of drama and staging, and application of research strategies and critical principles in dramatic medieval and Renaissance materials.
387.626 Seminar: Dramatic Theory and Criticism 3 cr.
Methodological and substantive analyses of experimental work in dramatic art; primary research encouraged.

Rhetoric and Public Address

Professor in Charge Donald C. Bryant
Degrees offered B.A., 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 extracurricular 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:

- **36:3.1 The Basics of Speech: Voice and Pronunciation**
  - One of the following:
    - 36:3.1 Public Speaking
    - 36:3.2 Interpersonal Communication
    - 36:3.3 Parliamentary Procedure
    - 36:3.5 or 36:151 Oral Interpretation of Literature
  - One of the following:
    - 36:21235 Theory and Practice of Persuasion
    - 36:12919 Theory and Practice of Argumentation
    - 36:13010 Interview and Conference Techniques
  - One of the following:
    - 36:215 Speeches of the Western World
    - 36:28 Theories of Rhetoric
    - 36:298 Rhetoric of Agitation and Control
    - 36:166 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 adviser.

Art programs will include:

- Introduction to Research (36:5.300); 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

**36:3.1 Principles of Speech Communication** 3 s.h.
Instruction and guided practice in fundamental of oral communication satisfies University requirement in speech for students not offering courses 36:1 and 36:2 (4313 or equivalent); requirement may be satisfied also by pass administered at beginning of each semester by Rhetoric Program, and for qualified students by passing Speech 36:3.20 and one open to electives 215-11 or 215-10 or equivalent.

**36:3.2 Public Speaking** 3 s.h.
Intermediate course to speechmaking—reviewing previous coursework (36:1 and 36:2.1, 36:2.2 equivalent) or other experience in speaking and oratory principles and practice of oral communication emphasizing speech making and presentation, as well as requirements for speaking in public service and professional careers.

**36:3.3 Group Discussion** 3 s.h.
Principles and practical application of group problem-solving techniques; leadership and group participation; projects in small, medium and large groups.

**36:3.4 Interpersonal Communication** 3 s.h.
Readings, lectures, and projects in dyadic and small-group analysis, involving theory and application of personal perceptions, interpersonal attraction, nonverbal communication, feedback and relational context.

**36:3.5 or others** 3 s.h.
Sale of order for conduct of business in meetings of assemblies, state and local organizations and boards, expanding knowledge and techniques of public speaking.

**36:1.61 Speeches of the Western World** 3 s.h.
Study of oratory of classical Greece and Rome, modern Europe, and modern America, as a part of the world's oratory and rhetorical heritage.

**36:1.66 Greek and Roman Public Address** 3 s.h.
Study of ancient oratory of Greece and Rome, emphasizing rhetoric, speech and oratory presentation.

**36:1.131 Contemporary Public Address** 3 s.h.
Study of current issues and developments, and research and analysis of specific speech topics.

**36:1.134 Group Communication** 3 s.h.
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.
Speech Pathology and Audiology

36R:129 Theory and Practice of Argumentation 3 s.h.
3:15 Introduction to Speech and Hearing Problems and Disorders 3 s.h.

Plan C: Theatre Emphasis
36R:32 Interpersonal Communication (required) 3 s.h.
36L:53 The Bass of Speech: Voice and Pronunciation (required) 3 s.h.
36L:57 Oral Interpretation of Literature I 3 s.h.
36L:110-111 Introduction to Theatrical Design I-II 6 s.h.
36L:140 Acting I 3 s.h.
36L:149 Children's Theatre and Creative Dramatics 3 s.h.
36L:50 Introduction to Broadcasting 3 s.h.
36L:51 Survey of Film 3 s.h.
36L:107 Educational Film 3 s.h.
36L:110 Speech for Educators 3 s.h.
3:15 Introduction to Speech and Hearing Processes and Disorders 3 s.h.

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 forensic, 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 Pre-education Practicum (PREB) 2 s.h.
75:75 Educational Psychology and Measurement 3 s.h.

Senior Year
76:160 Methods: High School Speech 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
36L:67 Methods High School Speeches 3 s.h.
Teaching speech, drama and forensics, consideration of various patterns in teaching, various programs, objectives, instructional methods, exercises or-n-r and writing criticisms and evaluation, factors in setting and grading, vocal and non-vocal, periods and sources of publications, practice and values of nonverbal and interpersonal activities, vocal and non-verbal, and terminology.

36L:57 Educational Forensics 3 s.h.
Planning, organizing and evaluating curricular and extracurricular forensics programs in school, designed for independent study; class meeting no more; during recess; exam arranged.

36L:110 Speech for Educators 3 s.h.
To add teachers and others interested in teaching relationships between teacher and student, awareness of the student, awareness of self, interaction between teacher and student, environmental communication, analysis of student's potential in becoming effective teacher, opportunity for student to act as superior, voluntary and evaluate.

Speech Pathology and Audiology

36L:25 The Teaching of Speech 3 s.h.
36L:25 Principles, problems and practical application of teaching speech and hearing expression in music, drama and speech in secondary schools; principal ideas, principles, techniques and maintain practices, readings, reports and discussions of methods related to teaching and evaluation.

36L:175 Workshop in Teaching Dramatics, Forensics and Speech or, etc.
Method, materials, vocal and non-vocal, and program and evaluation in teaching and supervising students in courses and various activities; opportunities for observation, demonstration and practice in teaching voice and speech development, dramatic art, dialogues and debates, radio and television, and individual speech, dramatic and forensic, some as Educators 75:60.

36L:260 Teaching Freshmen Rhetoric 2 s.h.
Letters, discourse, course exploring literature and problems involved in teaching composition, public speaking and reading since English 8500.

36L:201 Foundations of Speech Education 2 to 4 s.h.
Origins, early efforts, psychological basis, and theories and practices of teaching English, education and by early efforts to contribute to English education in works of Aristotle, Quintilian, Aule treatises, R. Augustine, Roussea, English teachers and writers.

36L:32 Modern Speech Education 2 to 4 s.h.
Modern speech education, beginning with works of Raus and English speech of English and English education, and ending with contemporary developments in teaching, research and speech education. A 2 unit, written methods and materials as created for educating literature and problems related to planning, organizing and evaluating speech program in secondary schools.

Speech Pathology and Audiology

Department Chairman: 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 for a wide variety of opportunities. These include clinical service, college and university teaching, and research concerned with speech, language, 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, outpatient 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 minimum level of preparation for persons seeking professional careers in this
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 want a degree in the College of Liberal Arts but who do not desire a career in this field. Students may qualify for either 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**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:15</td>
<td>Introduction to Speech and Hearing Processes and Disorders</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>3:20</td>
<td>Phonetics of American English</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>3:110</td>
<td>Anatomy of the Speech and Hearing Mechanisms</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>3:112</td>
<td>Fundamentals of Speech Science</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>3:113</td>
<td>Introduction to Hearing Science</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>3:114</td>
<td>Children's Language Development</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>3:117</td>
<td>Introduction to Psycholinguistics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>103:100</td>
<td>Introduction to Linguistics</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

**Required Courses in Related Areas**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>20:113</td>
<td>Physics of Sound and Music</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31:143</td>
<td>Statistical Analysis I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31:1</td>
<td>Elementary Psychology</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>31:3</td>
<td>General Psychology</td>
<td>4 s.h.</td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:100</td>
<td>(31:11) Child Development</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:151</td>
<td>(31:14) Introduction to Child Psychology</td>
<td>4 s.h.</td>
</tr>
</tbody>
</table>

**Group 2**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>31:13</td>
<td>Psychology of Adjustment</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31:105</td>
<td>Personality</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31:163</td>
<td>Abnormal Psychology</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

**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 courses for seniors (Honors Seminar and Honors Thesis). He is recommended for graduation with Honors by the Honors thesis advisor and the Departmental Honors advisor. Students who are eligible and who are not already classified as Honors students should confer with the departmental Honors advisor before the beginning of the senior year.

At any time during undergraduate study, students who have earned a minimum grade-point average of 3.0 and have not 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 advisor.

**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. are necessarily specified to ensure 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 presumed 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 enrollments. The student should choose one of these four curricula in relation to career objectives and interests.

A total of 36 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 some 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

*3:116 Neural Processes of Speech and Language 3 s.h.
*3:150 Clinical Procedures in Speech Pathology and Audiology 2 s.h.
*3:182 Articulation Disorders 3 s.h.
*2:185 Hearing Loss and Audiology 4 s.h.
3:214 Clinical Procedures for Language Habilitation 3 s.h.
3:244 Aural Rehabilitation 3 s.h.
7C:199 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 practical registration sufficient to meet supervised direct clinical experience requirements for Certificate of Clinical Competence of the American Speech and Hearing Association and to provide broad supervised clinical experience.

B. Speech Pathology, General Clinical Emphasis

Courses listed under A and

3:183 Stuttering 3 s.h.
3:212 Voice Disorders 2 s.h.
3:235 Neuroanatomies of Speech and Language 3 s.h.
3:237 Cleft Palate 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

3:183 Stuttering 3 s.h.
3:212 Voice Disorders 2 s.h.
3:235 Neuroanatomies of Speech and Language 3 s.h.
3:257 Cleft Palate 2 s.h.
7E:104 Remedial Methods in Speech and Hearing 3 s.h.
7E:192 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

3:120 Fundamentals of Laboratory Instrumentation 3 s.h.
3:241 Advanced Audiology 4 s.h.
3:343 Conservation of Hearing 3 s.h.
3:293 Hearing Aids 3 s.h.
3:244 Aural Rehabilitation (in addition to A above) 1 s.h.
3:257 Auditory and Speech Auditory System 3 s.h.
Practicum, research and elective courses to bring total to at least 38 semester hours

E. Audiology Major, School Hearing Clinic

Courses listed under A and

3:241 Advanced Audiology 4 s.h.
3:343 Conservation of Hearing 3 s.h.
3:293 Hearing Aids 3 s.h.
3:244 Aural Rehabilitation (in addition to A above) 1 s.h.
7E:104 Remedial Methods in Speech and Hearing 3 s.h.
7E:192 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 planned to provide 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 adviser 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 available in the fields of psychology, experimental psychology, statistics, physiology, neurology, anatomy and psychology.

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 study. 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
3:590, 591 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 practicums

C. Audiology

Courses listed under A and

3:254 Psychoncurotics
3:255 Psychoacoustics Laboratory
3:256 Physiology of Hearing
3:257 The Physiological Auditory System

Seminars in areas of interest

Clinical practicums

D. Speech and language science

Courses listed under A and

3:254 Psychoncurotics
3:255 Psychoacoustics Laboratory

Seminars in areas of interest

Courses in biological and physical sciences and mathematics

E. Hearing science

Courses listed under A and

3:254 Psychoncurotics
3:255 Psychoacoustics 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 these 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
of the human environment with particular reference to the urbanized areas. Preparation for work in this profession involves training in observing, analyzing and interpreting the social, economic, political and technological forces which affect environment. The Department is recognized by the American Institute of Planners as meeting its standards for professional education.

Both the M.A. and the M.S. degree program are professional programs which prepare and qualify students to enter the planning profession. The curriculum is planned for a two year, four-semester sequence. The total requirement is 48 semester hours.

There is today a strong demand for the services of persons with graduate degrees in planning. The profession is unusually rewarding in its opportunities for collaborative participation with professionals in related fields contributing to planning.

Admission Requirements

Candidates for admission are required to have a bachelor's degree from an accredited college. Applicants from a wide variety of fields of undergraduate concentration are eligible for admission. These fields considered most relevant are sociology, economics, political science, geography, civil engineering and architecture. Each student is expected to have a basic knowledge of economics, American government and statistics. Engineering students will be given exams in these areas, and extra individual work may be required to reach a minimal competence.

Study Direction

A program of study is prepared for each student on an individual basis, related to previous education and experience. In the second of the two years, students choose one of three directions in their planning education:

- General, in which students pursue the broadest knowledge of the field of urban and regional planning without specific specialization.
- Concentrated Generalist, in which students focus on a particular subclass of planning such as housing, health, design, transportation, education or land use.
- Specialist, in which students choose intensive study of a particular subclass at the expense of a more general approach and depend heavily on courses outside the Department.

Curriculum, Options and Requirements

The curriculum in planning is designed to differentiate between urban and regional focus, to allow for concentrations in various methodological disciplines, such as analytical techniques, policy formulation, implementation and evaluation of design, and concentrations in functional sectors of planning, such as land use, transportation, economic development, open space/recreation, social policy planning, health and environmental quality.

The required professional planning courses constitute approximately one-half of the semester hours necessary for the degree. The remaining hours are chosen to develop the special interests of the student through course offerings in other departments, specialized courses by the planning faculty and individual study programs.

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 overfold 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; inquiries 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. Variance 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 selected through counseling 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 carried through a major review 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 102-210 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 context four short courses of three to five weeks duration can be selected from approximately 10 offerings. The modules will cover subareas of planning such as housing, land-use controls, transportation, regional.
velopment and social planning. Thirdly, all students will take two hours of independent study which, in conjunction with the course modules, should represent an extension of the first semester work. There is also one three-credit elective. The general purpose of the semester is to introduce students to possible concentrations which are available.

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 during the third semester in order to develop a research design. During the second year students decide whether they wish to pursue a generalist, concentrated generalist or specialist education, and develop a suitable program with their advisor.

Choices for electives often are selected from outside the Department. They include a wide range of courses in the departments of Geography, Political Science, Sociology, Anthropology, 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 "omnibus" 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 fundamentals through the initiatives of students. Faculty members who teach for student experience with planning practice and problems. Questions raised by students will be the basis for further direction by the faculty.

The objectives of Omnibus are of two types. Process objectives refer to promoting work habits conducive to learning and human potential. Learning objectives are:
- To allow students the widest possible latitude to determine for themselves the nature of the problems of American society with which planners can deal;
- To work and learn in a cooperative manner by pooling established and emerging planning problems; and
- To equip students to cope with frustration and change, both of 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 contemporary social, economic and political conditions;
- To provide tools of synthesis such as systems analysis, scientific 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 quantitative skills.

Field Studies Program
From time to time there are opportunities for second-year students 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, such work can be carried out in residence. Program is open to students wishing to fund a regular field studies option in Chicago. If this is 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 research 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, 13 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 several 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-based program 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 can be part of a Departmental master's or doctoral program. The graduate program in urban transportation does not grant degree; degrees are granted by participating departments and programs, such as civil engineering, economics, geography, industrial and management engineering, political science, sociology 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 transportation program. Students will also have to meet degree requirements 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: transit planning is small metropolitan areas, trip generation and travel behavior in metropolitan areas, urban change detection and the continuing planning 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
urban context, with an emphasis on the interaction of several academic disciplines to define and adequately scope the urban transportation problems as they relate to social, economic, political and physical elements of the urban environment. This broad framework exists at The University of Houston 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 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
- 53.279 Urban Transportation Planning

The following are core courses for the Transportation Policy Analysis Option:
- 68.135 Introduction to Regional and Urban Economics or 44.137 City Growth and Development
- 30.101 Municipal Government and Politics or 30.293 Community Political Systems
- 34.150 Political Sociology or 102.226 Seminar: Urban Transportation
- 102.102 Urban Politics or 44.116 Political Ecology

The following are core courses for the Transportation Systems Analysis option:
- 53.215 — (Proposed) Transportation Analysis or 102.226 Seminar: Urban Transportation Issues
- 44.236 Travel Behavior in Urban Areas or 44.137 City Growth and Development
- 102.236 — (Proposed) Research Methodology or 56.248 Integer Programming and Network Flows
- 56.341 Introduction to Operations Research or 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 Council Chair: Patricia Addis

In response to a consensus 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-
Zoology

Department Chairman Jerry J. Kolros
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 meeting the preprofessional 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 course 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 non-major—that is, the major in the humanities, social sciences, business administration, etc.

The Departmental experience is based upon an introductory course whichstress 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 course students are given certain choices from a restricted block of courses: cytology, 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, bacteriology or mathematics (calculus) for four hours of work in zoological courses.

Required courses for the B.A. degree are:

37:101 Principles of Animal Biology 5 s.h.
37:110 Fundamental Genetics 4 s.h.
37:103 Cell Physiology 4 s.h.

Eight hours are to be selected from the following list:

37:102 Principles of Modern Embryology 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 37:101, 185, 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 (95:145) 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:

22M:20 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 3 s.h.
4/141 Intermediate Chemistry Laboratory 2 s.h.
29:1 and 2 or 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.

Honor's

Honor candidates in zoology fulfill the College-wide requirements by completing at least six semester hours of work in 37:101, 197, and 198 followed by a comprehensive examination. The Departmental program offers membership in a small, active group of graduate associates 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 pursuits of practicinig scientists to which the students are introduced. An introduction to research activity is 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 doctorates 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 with 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 consolidated into four general areas: developmental biology, ecology and behavior, genetics, physiology. Each aratment 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 is recommended that particular teaching or research experiences be sought. It has the obligation of offering advice and counsel. It is responsible for preparing 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 2.8 or better. Graduate Record Examination scores (verbal and quantitative) ought preferably to be above 1100 (the two scores 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 prepared to admit students with other backgrounds, such as biology, biochemistry, chemical science, etc. All new students, except those registering in August, submit themselves to a diagnostic examination covering topics in developmental biology, genetics, physiology with emphasis on cell physiology, evolution and ecology. On the basis of examination results students are excused from further work in 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 year. 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 30 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 371, 372 and 373 in zoology required to make up deficiencies revealed by the diagnostic examinations (see above), may be included in the 30-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 are to 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 and 371 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 M.S. Degree in Biology

Thirtysix 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 is 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 examina-
tion 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 Depart-
ment 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, in a cluster, the two newest being wings of the original unit. One of these, which doubled available research space, was occupied in 1965, 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 living 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, Nomarski differential interference contrast, and confocal microscopy. Centrifuges of various sorts, including refrigerated, high speed and ultra high speed types are available.

Other special equipment includes electrophoresis and chromato-
graphy apparatus; electron scanning and recording equip-
ment; neurophysiological studies; a PDP-12 computer, a Wang calculator, and other desk top computers; gas flow and liquid solilution counters for radionuclide detection; and analy-
sis including a gas flow chromatograph scanner and a gas flow counter; constant temperature bath units of various types for marine and fresh water studies and incubators; recording UV and visible spectrophotometers; densitometers; Coulter counters; instruments and a field vehicle for field work in physi-
ocology; water tables, aquaria and "instant oceans"; mi-
croinjection apparatus; tissue culture rooms and hoods, and cold rooms. Laboratories are otherwise equipped for advanced work which calls for specialized biochemical, biophysical, cytological or serological techniques.

Special Faculty Strengths

Virtually 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-
fiiceships 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 bodies 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 beneficiar y of the NSF "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

Graduate qualified students are invited to apply for awards and aids. At present some support is obtained by at least 80 percent of the graduate students in the Department. The largest sum are supported by teaching assistantships; all Ph.D. candidates are required to assist in several courses), by partial tuition scholar-
ships in the academic year and fall-sustaining 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 trainers, some NSF predoctoral fellows, several NIH trainees in developmental biology (in a Departmental train-
ing program), several NIH trainers in neurobiology (in an interdepartmental program), some NDEA predoctoral trainees, and several postdoctoral fellows or trainees supported from funds by the NSF and the NIH. One NIH predoctoral fellow is in residence.

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 each summer for students 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 has been defined at the time of application.

Iowa Lakeside Laboratory

Courses in field biology and aquatic biology extend the on-cam-
pus work in zoology. See "Dive-in: of Extension and University Services."
Courses Primarily for Undergraduates

37.110 Principles of Animal Genetics

37.111 Introduction to Microscopic Techniques

37.112 Animal Behavior I

37.113 Animal Behavior II

37.114 Comparative Animal Behavior Laboratory

37.115 Fundamental Genetics

37.116 Introduction to Evolutionary Genetics

37.117 Advanced Genetics

37.118 Population Genetics

37.119 Morphology, Physiology, and General Importance of Vertebrates and Invertebrates

37.120 Comparative Physiology

37.121 Comparative Zoology

37.122 A Planet in Crisis

37.123 Evolutionary Biology

37.124 Evolutionary Genetics

37.125 Animal Biology

37.126 Introduction to Animal Physiology

37.127 Cells and Their Environment

37.128 General Physiology

37.129 Comparative Physiology

37.130 Comparative Anatomy of Vertebrates

37.131 Comparative Anatomy of Invertebrates

37.132 Developmental Biology

37.133 Developmental Biology II

37.134 Systems Biology

37.135 Animal Behavior

37.136 Evolutionary Biology

37.137 Evolutionary Genetics

37.138 Evolutionary Developmental Biology

37.139 Introduction to Evolutionary Developmental Biology

37.140 Introduction to Evolutionary Developmental Biology II

37.141 Introductory Zoology

37.142 The Evolution of Life

37.143 Evolutionary Developmental Biology

37.144 Evolutionary Developmental Biology Laboratory

37.145 Evolutionary Developmental Biology Laboratory II

37.146 Comparative Animal Behavior Laboratory

37.147 Animal Behavior Laboratory

37.148 Animal Behavior Laboratory II

37.149 Animal Behavior Laboratory III

37.150 Animal Behavior Laboratory IV

37.151 Animal Behavior Laboratory V

37.152 Animal Behavior Laboratory VI

37.153 Animal Behavior Laboratory VII

37.154 Animal Behavior Laboratory VIII

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37.236 Animal Behavior Laboratory XL</ref>
Zoology

37:162 Population Genetics 3 a.h.
Lectures, discussions, readings, reports on distribution of alleles in populations; genetic basis of natural variation and genetic aspects of evolution; problems 37:120 or equivalent

37:163 Behavioral Genetics 3 a.h.
Behavioral and genetic techniques employed in study of inheritance of behavior characteristics; human and animal studies; emphasis on quantitative study of animal behavior; prerequisite: consent of instructor

37:168 Quantitative Genetics 3 a.h.
Principles of quantitative genetics presented in detail; emphasis placed on parametric estimation and selection of traits; prerequisites: 37:990 or 37:109 or equivalent and consent of instructor

37:169 Quantitative Methods in Biology 3 a.h.
Applications of statistical methods to biological data; data description and presentation, simple hypothesis testing, analysis of variance and linear models, using computer applications when possible; prerequisite: consent of instructor

37:171 Molecular Genetics 3 or 4 a.h.
Biogenesis of RNA, DNA and protein in bacteria and bacterial viruses; emphasis of dependence of these phenomena on genetic code; regulation of these bacteriophages, especially of RNA transcription; laboratory experiments; lectures; study of phage and bacterial replication, and nucleomorphous systems of rickettsial parasites; prerequisites: 37:168 or 37:110, or biochemistry, or permission of instructor

37:173 Topics in Molecular Genetics 3 a.h.
Area of particular current interest chosen for special study; e.g., "Regulation of Transcription" (1970); "Animal Tumor Virology" (1971); topic relates to general mechanisms for control of DNA, RNA, or protein synthesis; lectures, discussions, oral reports; prerequisite: 37:171 or consent of instructor; may be repeated for credit

37:177 Vascular Insect: Reproduction and Development 2 to 6 a.h.
Lectures, reports and discussions on gonadogenesis, accessory gland secretions, embryology and hormonal control mechanisms; research problem optional; prerequisite: consent of instructor

37:180 Sensory Neurophysiology 1 a.h.
Prerequisite: consent of instructor

37:181 Integrative Neurophysiology 2 a.h.
Selected topics of current interest in field of neurophysiology

37:194 Biochemical and Cellular Aspects of Development 4 a.h.
Covers problems in developmental biology, emphasizing mechanisms of informa
tion flow and their control; emphasis on micro-organisms, cells and self
organization; surveys cell-division processes, mechanisms for development and differentiation in multicellular organisms; prerequisites: 37:102; biochemistry recommended

37:196 Laboratory Research 1 to 3 a.h.
Instructor consent

37:197 Readings in Zoology 1 to 3 a.h.
For Honors candidates

37:198 Honors Seminar 1 or 2 a.h.
Discussions and readings centered on current or recent major topics in the regular lecture series of 37:121; may be repeated

37:199 Independent Research 1 or 2 a.h.
For senior majors in zoology; prerequisite: consent of instructor

Courses Primary for Graduates

37:204 Molecular and Experimental Entomology Laboratory 1 or 2 a.h.
Prerequisite: 37:168 or consent of instructor; emphasis on topics of current interest, with implications for fields of genetics and development; may be repeated; prerequisite: consent of instructor

37:205 Molecular Biology Seminar 3 a.h.
Course consists of research projects, oral and written reports; 37:111 and consent of both instructor and advanced students

37:206 Genetics Seminar 2 a.h.
Lectures and reports on four structure of cells, prerequisites 37:121 or equivalent

37:207 Independent Study 1 or 2 a.h.
Contact 37:111

37:208 Cauldron of Genes Seminar 3 a.h.
Informal discussion of selected topics from literature; for students engaged in research in genetics; may be repeated indefinitely; prerequisite: consent of instructor

37:215 Seminar: Genetics 0, 1 or 2 a.h.
Lectures, discussions, seminars on selected topics in genetics; may be repeated for credit, prerequisite: 37:110 or consent of instructor; same as 41:513 and 3:208

37:217 Zoology Seminar 0 or 1 a.h.
Wetski: lectures on current research; invited speakers

37:229 Seminar: Embryology 2 a.h.
Selected topics of current research interest in basic physiology and biochemistry of human tissues; readings, reports and discussions; prerequisite: 37:130 or 37:134 or equivalent

37:236 Seminar: Hermetology and Behavior 2 a.h.
Discussions, readings and reports on topics concerning several behavioral regu
lations of behavior; prerequisites: any among 37:160, 37:148, 37:110 or 37:114, or equivalent in physiology and behavior

37:239 Neuroendocrinology 2 a.h.
Lectures, discussions, readings, reports on development of nervous system and its organs, development of behavior, nerve growth and regeneration; prerequisites: 37:232 and graduate standing or consent of instructor

37:240 Histology 2 a.h.
Lectures and discussions on physiological, developmental, biochemical and meta
bolic aspects of animal histologues; emphasis on current literature; prerequisite: 37:118 or equivalent

37:241 Seminar: Theoretic Zoology 1 a.h.
Current concepts in eukaryotic zoology; prerequisite: 37:133 or consent of instructor

Biochemical and structural development in protists and microorganisms; new consideration of cellular systems, including integration of the cell cycle, cell organization, specialization and cellular differentiation, growth in two-dimensional space (interacts with 37:236); lectures and discussions; prerequisite: consent of instructor

Review of recent literature on behavior topics; may be repeated

37:245 Seminar: Genetic Evolution 2 a.h.
Discussions, readings, reports on topics relating to interactions between behavior and ecology: populations and adaptations; prerequisite: research problem in evolution and behavior or consent of instructor

37:250 Developmental Genetics 2 a.h.
Lectures, readings, discussions on gene action in development; prerequisite: 37:110

37:263 Seminar: Behavioral Genetics 1 a.h.
Prerequisite: 37:123

37:265 Seminar: Genetics 2 a.h.
Lectures, reports, discussions on development and differentiation in female and male germ cells; prerequisite: consent of instructor

37:274 Experimental Microscopic Techniques I 5 a.h.
Lectures and laboratory on methods of tissue fixation, embedding, ultrathin sec
tions, transmission and scanning electron microscopy; elementary techniques; prerequisite: 37:112 or 37:211 or equivalent, and consent of instructor

37:275 Experimental Microscopic Techniques II 4 a.h.
Continuation of 37:274; for experimental aspects of electron microscopy; includes staining, surface-coating, and scanning and transmission electron mi
croscopy; applications; prerequisite: 37:274; consent of instructor and consent of instructor

37:286 Problems in College Zoology 2 a.h.
Discussions of theoretical and practical problems, continued to graduate students

37:287 Independent Study in Zoology 0 or 1 a.h.

37:288 Independent Study in Zoology 0 or 1 a.h.

37:289 Independent Study in Zoology 0 or 1 a.h.

37:291 Independent Study in Zoology 0 or 1 a.h.

37:301 Independent Study in Zoology 0 or 1 a.h.

37:302 Independent Study in Zoology 0 or 1 a.h.

37:303 Independent Study in Zoology 0 or 1 a.h.

37:304 Independent Study in Zoology 0 or 1 a.h.

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37:329 Independent Study in Zoology 0 or 1 a.h.

37:330 Independent Study in Zoology 0 or 1 a.h.
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 I College of Liberal Arts' rhetoric skills requirement and either its historical-cultural, literature, social science or natural science core requirements. 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 as 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 more for a summer session require the student 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 nonbusiness courses. Thus the student must develop more 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 completed 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 3 s.h.
- Historical-Cultural 3 s.h.
- Literature 3 s.h.
- Natural Science 3 s.h.
- Sociology or Psychology (two courses in either area) 6 s.h.
- Quantitative Methods 3 s.h.
- Accounting 3 s.h.
- Economics 3 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**

As 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 admittance 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 Examination and Examination Services, 350 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, 36 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 Resources 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>
<th>Finance</th>
<th>Organizational Theory</th>
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<tbody>
<tr>
<td>Industrial Relations</td>
<td>Quantitative Methods</td>
<td>International Business</td>
<td>Risk Management and Insurance</td>
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<tr>
<td>Marketing</td>
<td>Systems Management</td>
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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:202 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 college 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 one or more of the more specialized courses. Ideally, the student should complete all the 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:

**Economic Theory**
6B:214 Income and Employment Theory 3 s.h.
6B:214 Income and Employment Theory 3 s.h.
Statistics and Quantitative Analysis
6B:242 Operations Research in Business 3 s.h.
6B:243 Statistics for Decision Making I 3 s.h.
6B:244 Statistics for Decision Making II 6 s.h.
Behavioral Sciences
6B:263 Behavioral Science and Business Organization I 6 s.h.
6B:264 Behavioral Science and Business Organization II 6 s.h.
Social Environment
6B:259 Social Environment of Industry 3 s.h.

**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 "200-level" graduate courses in each of two areas. The elected electives must be in comprehensive examinations, but this is unusual. Any student, regardless of the number of courses, 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 must 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 may also 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 a 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 F. Bialogl
Degrees Offered: B.B.A., M.A.

Accounting is the systematic recording, classifying and interpretation of the economic facts of a business or other organization, 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 3 s.h.
6A:130 Accounting for Managerial Analysis and Control 3 s.h.
6A:144 Auditing Concepts and Procedures 3 s.h.
6A:145 Senior Seminar in Accounting 3 s.h.

In addition, the student may elect one or more of these courses:
6A:141 Advanced Tax Accounting 3 s.h.
6A:148 Professional Accounting Problems 3 s.h.
6A:170 Special Topics in Accounting 3 s.h.

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 3 s.h.
6A:221 Accounting Literature and Research II 3 s.h.
6A:222 Contemporary Accounting Issues 3 s.h.
6A:223 Contemporary Accounting Theory II 3 s.h.

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 the latter case 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 Barou, Professor Emeritus Buresh, Maynard; associate professor Bialogl, Kinney, Smith; assistant professors Bailey, Kennedy, King, Lottt, Lambke

Courses Primarily for Undergraduates
6A:115 Introduction to Accounting 3 s.h.
Survey and analysis of contemporary accounting information systems emphasizing external reporting by firms to investors; corporate earnings reports and their relation to investor decisions; pruprietary limitation of liability relative to accounting information; income taxes; financial accounting; financial reporting; opportunity costs and price levels. Designed for the business major.
6A:123 Introduction to Accounting II 3 s.h.
Survey and analysis of contemporary accounting information systems, emphasis on preparation of internal reports in organizations; internal reports and their relation to decision making; emphasis on cost concepts and procedures employed by firms; prerequisite 6A:115.

Courses for Undergraduates and Graduates
6A:116 Income Tax Accounting 3 s.h.
Survey of current practical and theoretical aspects relating to income taxation. Emphasizes taxes on income, estates, and gifts. Prerequisite: 6A:115.

6A:120 Accounting for Management 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 topics of discussion; prerequisite 6A:120 or equivalent.

Concepts and methods of corporate external reporting; theoretical basis of current reporting practices; overview of fundamental concepts of inventory; investment in 6A:116 or equivalent.

Concepts and methods of corporate external reporting; theoretical basis of current reporting practices; overview of fundamental concepts of inventory; investment in 6A:116 or equivalent.

6A:144 Auditing Concepts and Procedures 3 s.h.
Review of auditing techniques; basic auditing procedures; audit planning and audit of accounting systems; income tax aspects of auditing.

6A:145 Senior Seminar in Accounting 3 s.h.
Review of auditing techniques; basic auditing procedures; audit planning and audit of accounting systems; income tax aspects of auditing.

6A:146 Advanced Accounting 3 s.h.
Fundamental concepts and procedures in corporate external reporting such as budgetary controls, complex international financial statements and reconstructions, product and process cost accounting methods compared and analyzed; prerequisite: 6A:115.

6A:170 Special Topics in Accounting 3 s.h.
Survey of current issues related to current developments in the field of accounting, techniques and procedures necessary to test integrity of accounting systems. Prerequisite: 6A:115 or equivalent.

6A:144 Audit 3 s.h.
Review of audit controls in accounting systems and considerations of audit objectives, standards and procedures necessary to test integrity of accounting systems. Prerequisite: 6A:115 or equivalent.

6A:145 Senior Seminar in Accounting 3 s.h.
Review of audit controls in accounting systems and considerations of audit objectives, standards and procedures necessary to test integrity of accounting systems. Prerequisite: 6A:115 or equivalent.

6A:146 Advanced Accounting 3 s.h.

6A:147 Advanced Accounting 3 s.h.

6A:148 Professional Accounting Problems 3 s.h.

6A:150 Financial Reporting 3 s.h.

6A:151 Financial Accounting 3 s.h.

6A:155 Financial Accounting 3 s.h.

6A:170 Special Topics in Accounting 3 s.h.

6A:170 Special Topics in Accounting 3 s.h.

6A:170 Special Topics in Accounting 3 s.h.

6A:170 Special Topics in Accounting 3 s.h.

6A:170 Special Topics in Accounting 3 s.h.

6A:170 Special Topics in Accounting 3 s.h.

6A:170 Special Topics in Accounting 3 s.h.

6A:170 Special Topics in Accounting 3 s.h.

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Business Administration

Department Chairman: Anthony V. Stipilcor
Degree offered: B.B.A.

Students graduating with the B.B.A. in business administration have a wide range of career choices. The largest number goes into marketing. Many are employed by financial institutions and in junior management positions. Others enter government service and other public service fields requiring administrative skills. Many continue their studies toward advanced degrees.

There is also considerable latitude within career areas. For example, the avenue open to a business administration graduate with a major in marketing include advertising and promotion, consumer product development and improvement, and product distribution.

The purpose of Iowa's undergraduate program in business administration is to give the student a general overview of business with its position in and relationship to society. It deals with business theory, decision making and management systems generally, rather than specializing in a particular facet of business administration.

Designed to teach students about business rather than how to conduct business, the program's behavioral approach stresses the concept of the human interaction in business and society at large.

The student of business administration can choose between two options in fulfilling the degree requirements:

A. In addition to courses specified in the College's general statement, students can select two three-course sequences (usually nine to twelve hours) in areas of concentration approved by a faculty advisor. Two of the courses in each area must be offered by the College of Business Administration.

B. In addition to courses outlined in the general statement, students can elect a major in one of the following areas by satisfying the specified requirements.

Requirements for the Major in Financial Management

6B:111 Investments
6B:114 Commercial Banking
Students also must elect either 6B:115 or 6B:116 and select six additional semester hours from the following courses:
6B:112 Security Analysis
6B:126 Real Estate and Urban Land Economics
6B:115 Short-Term Financing
6B:116 Long-Term Financing
At least two semester hour courses beyond the basic core are also required.

Requirements for the Major in Financial Economics

6E:117 Money and Banking
6E:119 Public Finance
6E:171 Industrial Organization
6B:111 Investments
6B:114 Commercial Banking
6B:103 Managerial Economics or 6E:103 Micro-Economics

Requirements for the Major in Insurance

6B:20 General Insurance
6B:131 Property and Casualty Insurance
6B:122 Life and Health Insurance
In addition, students must select at least one, but no more than two, courses from the following:
6B:120 Mathematics of Insurance
6B:124 Social Insurance
6B:124 Risk Management
6B:129 Independent Study
Six additional hours of courses are specified by the student's advisor.

Requirements for the Major in Industrial Relations

6E:150 Minority Rights in an Industrial Society
6B:153 Labor-Management Relations and Public Policy
6B:154 Human Resources Management
Courses for Undergraduates and Graduates

65:101 Directed Readings in Business Administration or. arr. individually guided readings in selected topics in business
65:103 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.

65:115 Investment Banking 3 s.h.

Activities involved in selecting among alternative financial assets from viewpoint of individual; present value, security markets, industry developments.

65:113 Security Analysis 4 s.h.

Valuation of corporate securities; financial statement analysis; economic and regulatory environment.

65:114 Commercial Banking 3 s.h.

Banking structure and functions; money market and liquidity management; lending policies and portfolio management; banking competition and regulation; prerequisites: 65:12 or consent of instructor.

65:116 Intermediary Financial Management 4 s.h.

Case problem approach; methods of analyzing and planning current position of firms; management of all types of debt and equity capital structure planning; understanding of security issues; issues of capital and capital budgeting; prerequisites: 65:12 or consent of instructor.

65:119 Selected Topics in Finance 3-6 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 instructor.

65:117 Economics of Business 3 s.h.

Elements from probability and mathematics of finance developed and applied to problems in determination of insurance premiums, benefits and reserve values; same as Economics 220-80.

65:121 Property and Liability Insurance 3 s.h.

Business and individual needs for insurance; fire, marine, and liability insurance; allied lines; public liability; automobile; other property and casualty coverage; insurance contracts and underwriting; prerequisites: 65:20.

65:122 Life and Health Insurance 3 s.h.

Life, health and annuity contracts from viewpoint of the individual, business, government and insurance companies; policy types; rate making; investments, regulation, group insurance, estate planning, prerequisites: 65:30.

65:130 Social Insurance 3 s.h.

Governmental activities in creating economic security and alleviating poverty; issues of social security, current programs including OASDI, Unemployment Comp., AFDC, etc.; potential programs such as national health insurance.

65:134 Risk Management 3 s.h.

Identification of risks and insured management for dealing with risks; avoidance, assessment, reduction and transfer of risk; risk management; methods and techniques of risk analysis and evaluation of losses; case studies in risk management; prerequisites: 65:131 and 65:122 or senior standing.

65:135 Finance and Economics of Insurance 3 s.h.

Financial markets and policies of real estate and mortgage finance affecting its growth and structure of cities; timing, procedure and techniques of investment of reversionary funds; analysis of property, liability, and life insurance management; real estate finance and investments, prerequisites: Economics 110.

65:132 Distribution Channels 3 s.h.

Sectors of distribution and management's role in selection of channels of distribution, causes of change, prerequisite: 65:121.

65:136 Marketing Information 3 s.h.

Marketing distribution research methods and role of marketing information as management tool in decision-making; prerequisites: 65:21 and introductory marketing management.

65:135 Promotional Concepts/Buyer Behavior 3 s.h.

Anchors on behavioral aspects of advertising and personal selling; discussion of influences on buying behavior, including learning, perception, discrimination, imagery, advertising, product trials, self, role, life style, reference groups, culture, social class and family; strategic use of persuasive communications in marketing; prerequisites: 65:131 or consent of instructor.

65:137 Advertising Theory and Planning 3 s.h.

Advertising as promotional force; emphasis on theory; planning methods; structural and tactical decisions that advertising executive makes; same as Journalism 150-120.

65:138 Advertising Communications 3 s.h.

Theories of consumer acceptance and human behavior as applied to advertising copy and layout; laboratory situations designed to test creative experience; same as Journalism 150-125; prerequisites: 65:137 or Journalism 150-120.

Courses Primarily for Undergraduates

65:10 Quantitative Analysis 3 s.h.

Quantitative models and application to decision-making; matrices, linear programming, matrix algebra, game theory and other related operations research techniques.

65:11 Statistical Analysis 3 s.h.

Fundamental principles of business evaluation; study of framework for solving managerial problems involving uncertainty or risk; discussion of related statistical data and use of data.

65:12 Computer Methods 3 s.h.

Functions of computer; emphasis on role in problem solving; computer application of quantitative models for decision making using linear models and programs written by student; programming included only to prepare student to use computer.

65:15 Financial Management 3 s.h.


65:20 General Insurance 3 s.h.

The role of the risk, management, arrangements for dealing with risk, insurance industry, types of insurances, functions of insurance and government regulation of insurance, social insurance; basic features of selected insurance contracts; prerequisite: Economics 62.

65:31 Introduction to Marketing 3 s.h.

General introduction to structures of marketing, marketing environment of organization and its strategies in marketing decision making, buyer behavior and management of marketing decisions.

65:47 Introduction to Law 3 s.h.

General history and structure of law; role of law's action in guiding changing economic and social relations; same as Economics 60.1 or junior marking.

65:55 Administrative Organization 3 s.h.

Overview of technical, economic and human problems encountered by both managerial and nonmanagerial members of task-oriented organizations; basic discipline of the organization; comprehensive examing of organization principles; fundamentals of technical problem analysis and decision methods introduced as encountered in organizational environment.

65:68 Production Management 3 s.h.

Organization and management of manufacturing enterprise; production design and process planning, process layout and materials handling, work simplification and measurement, productivity and inventory control, quality control, plant location, maintenance of plant and equipment, cost and budgetary control; prerequisite: Economics 62.

65:105 Administrative Organization 3 s.h.

Overview of technical, economic and human problems encountered by both managerial and nonmanagerial members of task-oriented organizations; basic discipline of the organization; comprehensive examination of organization principles; fundamentals of technical problem analysis and decision methods introduced as encountered in organizational environment.

65:68 Production Management 3 s.h.

Organization and management of manufacturing enterprise; production design and process planning, process layout and materials handling, work simplification and measurement, productivity and inventory control, quality control, plant location, maintenance of plant and equipment, cost and budgetary control; prerequisite: Economics 62.
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 a 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 Typing**
- **65:33 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.
- **65:155 Data Processing Systems** 3 s.h.
- **65:148 Practicum: Office Problems** cr. arr.
- **65:156 Data Processing Systems** 3 s.h.
- or other elective 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.

**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 nonteaching degree in business administration.

**M.A. Program**

This nonthesis program in business education is designed for the graduate student who holds a baccalaureate degree 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 education
- 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 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.
The M.A.T. program is a 34-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 certification are eligible if they have completed accredited bachelor's degree programs with majors in academic areas commonly included in high school curriculums and have obtained 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 summers 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:
- Auditory-Teaching Methods
- Social Development of the School-Age Child
- Principles of Guidance
- Construction and Use of Classroom Tests
- Preprofessional Seminar

Education Psychology 3
Philosophy or History of Education 3
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 of study
- 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 adviser.

Facilities

Modern office machines and equipment as well as secretarial listening laboratories are housed in the new air-conditioned College of Business Administration building, Phillips 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, Kallen, associate professor Nellermoe; assistant professors Ennis, Zuber

Courses Primarily for Undergraduates

6811 Basic Typewriting 3 s.h.
Basic organization and operation of modern-day communication media; integrative techniques and fundamental business letters, forms and forms; open only to students with 6800 or an equivalent

6812 Business Typewriting 3 s.h.
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 6811 or equivalent

6813 Beginning Shorthand 3 s.h.
Shorthand theory and development of skill through business dictation; prerequisite 6811 and consent of instructor; open to students with one year of high school shorthand in equivalent

6814 Advanced Shorthand 3 s.h.
Shorthand theory and review; skill development and transcriptions; prerequisites 6811 and 6813 or equivalent; second semester only

6815 Transcription 3 s.h.
Theory and development of advanced skill in transcription; prerequisites 6811 or equivalent; third semester only

6820 Executive Secretarial Procedures 3 s.h.
Development and integration of knowledge, skill and related qualities necessary for high-level activity or administrative assistant positions, with teaching implications for business education majors; prerequisites 6811 or equivalent, 6813 or equivalent, and junior standing; second semester only
Economics

Department Chairman: Jared Bernard
Department Office: B.B.A. 409

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 Requirement

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 graduate degree may meet the requirements for the degree by meeting the common require-
Economics

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 se-
quence of core courses, a set of major area courses and the
writing of a dissertation. The core areas are microeconomic the-
ory, macroeconomic theory, mathematical economics and
economicometrics. The core itself is comprised of 10 courses designed
to be taken in a specific sequence. The academic loads of nine
to 10 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
6E 203 Microeconomics I 3 s.h.
6E 211 Mathematical Economics I
Multi-variable Calculus, e.g., 22M 28
(22M 28 may be taken for three semester
hours graduate credit under the number
22M 199) 4 s.h.
6E 200 Topics in Economics 1 s.h.

Second semester
6E 204 Macroeconomics I 3 s.h.
6E 212 Mathematical Economics II 3 s.h.
22S 120 Probability and Statistics 4 s.h.

Third semester
6E 205 Microeconomics II 3 s.h.
6E 221 Econometrics I 3 s.h.
Field course 3 s.h.

Fourth semester
6E 206 Macroeconomics II 3 s.h.
6E 221 Econometrics II 3 s.h.
Field course 3 s.h.

Incoming students who have multivariable calculus may re-
place this course with a field elective in their first semester. Those
with aspirations for a major in econometric analysis should take 22S 153
Introduction to Mathematical Statistics i and in their second
semester replace Statistics 22S 120 with 22S 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 eco-


The Department of Economics offers an undergraduate degree
“with Honors in Economics.” Students interested in this pro-
gram should consult the chairman to obtain a prospectus.

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 2.3 (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
(Aptitude Test and three letters of recommendation. Minimum
requirements 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. pro-
gram.

Master of Arts

The M.A. degree is designed as a terminal degree. Incoming
students who feel that they may wish to earn the Ph.D. but who
are initially undecided are advised to enroll in the Ph.D. pro-
gram 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
6E 201 National Income 3 s.h.
6E 202 Price Theory 3 s.h.

History
6E 207 History of Economic Thought I 3 s.h.
6E 262 Economic History of North America 3 s.h.

Quantitative Economics
6E 181 Quantitative Analysis 3 s.h.
6E 112 Business Statistics 3 s.h.

Field
Three electives
3 s.h. each

or

four electives
3 s.h. each
two seminars and papers
3 s.h. each
Administrative Staff

Dean: Donald J. Galagan
Dean Emeritus: George S. Boston
Associate Dean and Coordinator of Research: Jess Hayday, Jr.
Director of Clinics: C. Frederick Kist
Coordinator, Student Affairs and
Director, Continuing Education: Ralph C. Appleby
Librarian: Margaret E. Arnett

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 relationships with the College 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.), comprises 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 microanatomy; physiology; general pathobiology; oral pathobiology; pharmacology; microbiology; clinical pathobiology; oral biology

Restorative Dental Sciences

Gross, microscopic and radiographic dental anatomy; dental materials; endodontics; operative dentistry; fixed partial prosthesis; removable prosthesis

Oral Medicine

Physiology of mastication; introduction to diagnosis and therapy; preventive dentistry; oral diagnosis; dental radiology; endodontics; and pain control; oral surgery; periodontology; internal medicine; therapeutics; biological conference

Community Dentistry

Etiology; 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; prevention 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 freshmen year.

The sophomore program includes comprehensive training in the effective 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 "clinics" 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-book control, the dynamics of presenting treatment plans to private patients and the relationship of the dentist to the community.

Special Programs

Enrichment

A dental student may satisfy Departmental requirements by examination in lieu of course participation. The.simultaneously gained 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 remain 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 science. 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 restorative dental sciences and
They 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 buildings, 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 baccalaureate degree before entering dentistry or 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 work 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 86 semester hours and including these required courses:

Rhetoric
Satisfactory accomplishment in English composition and speech communicative 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 36 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 proficiency 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 $250 deposit within 30 days after notification of favorable action on his or her application. This deposit is nonrefundable but is credited toward the first year's 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 program 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 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 not residents 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 committees appointed by the dean from among faculty members involved in 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. This decision reached by the committee is final.

State Boards of Examination
All states require an examination before a board of dental examinees 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 $200 per year. In addition, charges are assessed for expendable laboratory supplies, averaging approximately $50 per year for the first two years, and a $100 brakeage for which is refundable upon graduation or termination of enrollment.

Financial Assistance
Under the Health Professions Scholarship and Loan Programs, eligible dental students may borrow up to $5,500 each year of their undergraduate professional studies. Eligible students may also apply for federal scholarships. Preference is given to students who would otherwise be unable to finance their dental education. Loans are issued at low interest rates and are repayable over an extended period of time after the recipient completes 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 and the Iowa Dental Education 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 Aid. This includes opportunity 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 Aid.

Student Organizations
All dental students automatically have membership in the American Student Dental Association. Students who rank in the
upper 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 Omicron, have chapter houses at Iowa, and both have 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 Restorative Dentistry, 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 practice. 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.

171/185 The Science of Nutrition 3 s.h.

Principles of human nutrition; dental reference to oral health; pregnancy; Biochemistry 95/100 3 s.h.

Introduction to the study of chemical relations of the body. 72/215: sophomore year, junior year.

181/181 Stress Anatomy for Dental Students 6 s.h.

Principles of anatomy and physiology; emphasis on head and neck. Graduate students must have consent of Department head. Prerequisite: one year dental hygiene. 62/215: sophomore Anatomy for Dental Students 6 s.h.

Chemistry, physics, and biology; development of form and structure of teeth, muscles, and nerves. 62/220: sophomore year, sophomore year.

61/102 Dental Microbiology (Bacteriology) 5 s.h.

Leaves, exfoliation, nutrition, symbiosis. 61/320 General and Systematic Pathology for Dental Students 4 s.h.

Lecture, conference, laboratory, clinical pharmacology and therapeutic use of drugs, emphasis on those of special interest in dentistry, sophomore year.

62/216 Pharmacology 6 s.h.

Lecture, conference, laboratory, review pharmacology and application to clinical practice for general education in dentistry.

62/216: sophomore year, sophomore year.

62/115 Histology 4 s.h.

Chemical constituents and reactions of living matter. 74 clock hours. 94 clock hours sophomore year.

Dental Hygiene
See "College of Liberal Arts"

Fixed Prosthodontics

Department Head: Kerin E. Thayer

Degree offered: M.S.

The primary purpose of the Master of Science program is fixed prosthodontics to train and prepare dentists for careers in College of Dentistry/Fixed Prosthodontics/odontal education and/or dental research. It is also adequate 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 the College of Dentistry 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 to the program correspond to the required examinations for admission to the Graduate College of the University. In addition, the student must hold a D.O.D. or D.M.D. degree or its foreign equivalent.

No advanced G.R.E. 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 biostatistics 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. All or 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 work for 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 emerita Karr; assistant professors Prittie, Krachat, Sverse

Courses

101/101 Oral Hygiene 2 s.h.

101/107 Fixed Prosthodontics Technique 2 s.h.

62/116 Anatomy and Physiology of Dentition 4 s.h.

62/116 Fixed Prosthodontics Laboratory 4 s.h.

62/121 Dental Materials 1 s.h.

62/121 Fixed Prosthodontics Theory 4 s.h.

62/121 Fixed Prosthodontics Laboratory 4 s.h.

62/122 Fixed Prosthodontics 4 s.h.

62/122 Oral Rehabilitation 4 s.h.

62/122 Fixed Prosthodontics 4 s.h.

62/122 Oral Rehabilitation 4 s.h.

62/122 Fixed Prosthodontics 4 s.h.

62/122 Oral Rehabilitation 4 s.h.

62/122 Fixed Prosthodontics 4 s.h.

62/122 Oral Rehabilitation 4 s.h.

62/122 Fixed Prosthodontics 4 s.h.
Operative Dentistry and Endodontics

Department Head: Wallace W. Johnson
Degree offered: M.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 in the patient clinic.

In operative dentistry, the student learns the methods and materials used to remove 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 a good grade point average is required.

Unnecessary work in mathematics and chemistry 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. Satisfactory performance of at least 48 semester hours of all graduate-level courses to be divided as follows:

1. 30 semester hours in major field of clinical endodontics and selected courses offered by the departments of the College of Dentistry
2. 10 semester hours in a minor field of biochemistry, physiology or microbiology
3. 10 semester hours in the contributing areas of microsurgery, mathematics, statistics, and analytical chemistry

B. Preparation of an acceptable thesis based on original research; not less than 16 semester hours of research credit and eight semester hours of thesis preparation credit may be counted in satisfying the 48 semester hours minimum for the degree

C. Satisfactory performance in a comprehensive written and oral examination which is of 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.

Applicants for this program must be a graduate of a recognized school of dentistry and must satisfy 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, those Departmental requirements must be met:

1. 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

2. 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.

3. Formal defense of the thesis and examination of the candidate by the examining committee. The director of the degree program will act as adviser to the student and as chairman of the examining committee.

Staff: professor Bjorndal (director, Endodontics), Johnson (director, Operative Dentistry), professor emeritus Wib, associate professors Chao, Khoury, associate professors Denney, Fuller, instructors Lueke, Hatch, Tomay, Leuck

Teaching assistant staff: associate professors Killips, assistants professors Lewis, Logan
Oral Biology

Courses

Endodontics
82:106 Endodontics 2.5 s.h.
Lectures, seminars, laboratory projects designed to give students an understanding of basic endodontic principles.

82:116 Clinical Endodontic Practicum 1.5 s.h.
Clinical endodontic practice; emphasis on endodontic root canal treatment of each individual case followed by student's and professional evaluation on simple and complex cases; prerequisites 82:106, third year

Primarily for Graduates
82:206 Endodontic Literature Review 1.0 s.h.
Advanced reading and preparation of abstracts
82:205 Research in Endodontics cr. 3-12
Required of all students working toward advanced degree; may be taken only on consent of course director
82:254 Seminar in Endodontics cr. 1
Conferences and discussions of recent literature, specific assignments, discussed and repeated at the request of the student
82:303 Practice Teaching Endodontics cr. 1
For students working in office field of dental education; assigned teaching obligations by advisor; prerequisites Education TP 251
82:305 Thesis Preparation in Endodontics cr. 1
Prepares for publication of a narrative article on assigned research project, related with graphic illustration, charts, photographs
82:355 Advanced Endodontics cr. 3
Preparation of course 82:305; advanced review of research and technical procedures
82:356 Advanced Clinical Endodontics cr. 3
Clinical demonstration of advanced and surgical endodontic cases

* May be taken during any semester with permission of Department head

Operative Dentistry
82:120 Dental Anatomy 2 s.h.
Lectures and discussions concerning dental structures, detailed anatomy, eruption patterns and occlusion of human primary and permanent dentition, first year.
82:120 Dental Anatomy Laboratory 2 s.h.
Detailed study of human teeth, morphology and function utilizing Sectional anatomy, section and internal teeth, first year
82:403 Operative Dentistry 2 s.h.
Lectures and seminars concerning dental structures, principles of design and execution of dental restorations utilizing placement of restorative materials in preparation, positioning, placement, and finish, second year
82:404 Operative Dentistry Laboratory 8 s.h.
Study and application of procedures involved in the preparation of human teeth to receive operative restorations; student performs all stages of cavity resection in natural and plastic teeth, uses various dental materials in fabrication of restorations; first year
82:115 Dental Therapeutics for Dental Hygienists 1.0 s.h.
Survey of drugs used in dentistry; pharmacology; dosage; toxic levels

* May be taken during any semester with permission of Department head

Predoctoral Dental Hygiene
82:106 Dental Hygiene 1.5 s.h.
Study and application of procedures involved in the preparation of human teeth to receive operative restorations; dental hygiene students prepare Class I, II, III, and IV cavities in natural teeth and use composite and amalgam in fabrication of restorative procedures; prerequisites 82:105; second year
82:107 Operative Dental Hygiene 3 s.h.
Lectures, seminars, laboratory projects are designed to give students an understanding of basic principles of operative dental hygiene, with emphasis on the prevention of iatrogenic dental injuries to patients; first year
82:108 Clinical Operative Dental Hygiene 3.5 s.h.
Clinical experience in operative procedures involving the operative treatment of patients; emphasis on operative procedures for operative treatment of patients; prerequisites 82:106, third year
82:207 Advanced Operative Dental Hygiene 3 s.h.
Seminars and clinical demonstrations concerned with advanced operative procedures for operative treatment of patients; emphasis on operative procedures for operative treatment of patients; prerequisites 82:106, second year
82:205 Advanced Dental Therapeutics cr. 3
Study of pharmacology and applications of drugs used in dentistry

Teacher Education
82:255 Curriculum Development for Dental Education cr. 1
Analysis of problems in dental education; emphasis on student-centered instruction; objectives, strategies, and oognitive processes in teaching; course development and evaluation; supervision of field experience
82:256 Design and Evaluation of Research in Dental Education cr. 3
Opportunity to order stages in research process into meaningful sequence terminating practical writing format for dental education research, problems; techniques, research design
82:257 Research in Dental Education cr. 3
Opportunity to order stages in research process into meaningful sequence terminating practical writing format for dental education research, problems; techniques, research design
82:355 Research in Dental Education cr. 3
Opportunity to order stages in research process into meaningful sequence terminating practical writing format for dental education research, problems; techniques, research design

* May be taken during any semester with permission of Department head

Oral Biology

Acting Department Head: Harvinder N. Bains

Through coursework and research opportunities, the Department of Oral Biology gives students an early exposure to the broad range of dental biosciences, such as oral anatomy, oral histology and oral microbiology; core less biological conditions with clinical syndromes; supplements basic science instruction provided by the College of Medicine; enhances the correlation and integration of basic and clinical sciences; provides a secondary area of specialization for dental graduate students; and allows students to strengthen their research capabilities and interests of graduate students, dental students and the faculty in collaborative research.
to undergraduate students in dentistry, and operates a laboratory fully equipped for hard-tissue research.

Staff: professor Soni; associate professor Weber; assistant profes-
sors Mackenzie, Sear

Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>93:101 Oral Biology</td>
<td>2 a.h.</td>
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<tr>
<td>Recent advances in oral biology: dynamic concepts of microsized tissues; prevention of oral diseases; fluorides and antiseptics in dentistry</td>
<td></td>
</tr>
<tr>
<td>93:103 Oral Biology</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>Lectures, seminar, laboratory; physiology of oral cavity; speech pathology; clinical evaluation</td>
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<tr>
<td>93:125 Problems</td>
<td>or art.</td>
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<tr>
<td>Small research projects pertaining to recent developments in oral biology</td>
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For Graduates

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<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>93:291 Mineral Metabolism and Dental Caries</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>Structure in relation to disease and metabolism of bone substances in relation to normal and abnormal dental diseases</td>
<td></td>
</tr>
<tr>
<td>93:292 Physiology and Structure of Bone</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>Histology, physiology, pathology of bone: reference to growth and resorption, development, functional integration of bone tissue in pathological states such as developmental disturbances, inflammatory diseases, disturbances of metabolism, tumors</td>
<td></td>
</tr>
<tr>
<td>93:293 Topics in Oral Biology</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>Seminar on recent developments in oral biology</td>
<td></td>
</tr>
<tr>
<td>93:294 Research Techniques in Oral Biology</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>Includes theory and practice of preparation of causes for light microscopy; preparation of sections for botany and zoology and techniques used in delineating them</td>
<td></td>
</tr>
<tr>
<td>93:295 Research in Oral Biology</td>
<td>or art.</td>
</tr>
<tr>
<td>93:296 Biology of the Periodontium and Pulp</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>Normal structure of periodontium and pulp; their growth and development</td>
<td></td>
</tr>
<tr>
<td>93:297 Practice Teaching</td>
<td>or art.</td>
</tr>
<tr>
<td>Supervised practical experience in clinics and laboratory teaching</td>
<td></td>
</tr>
</tbody>
</table>

Oral Diagnosis

Joining Division: James D. Whitney
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 lectures, 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 personal care and police being performed 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 instructional needs in undergraduate and graduate programs, the Division serves as a screening and diagnostic area for all patients entering the College of Den-
tistry for treatment. This service is vital to the maintenance of an assistant professor had had for the other clinical teaching facilities of the College.

Master of Science Degree with Thesis

All candidates for the Master of Science degree in oral diagnosis are required to pursue a course consisting of the minimum require-
ments of the Graduate College. No provision is made for pursuit of a Master of Science degree without a thesis. The candidate is expected to develop substantial interest in research in his or her selected field of endeavor, and the area of research must be applicable to the general field of oral diagnosis. Minimum require-
ments for the completion of the thesis are 24 months of work in a full-time graduate program enrollment. This will in-
clude a minimum of 40 semester hours of acceptable graduate credit in courses outlined by the staff of the Division of Oral Diagnosis. Determination of the qualification of the candidate for the degree of Master of Science will be made by a final comprehensive oral examination in accordance with the rules of the Graduate College.

Admission Requirements

The size of the Division staff and facilities limits the number of applicants who may be accepted for the Master of Science degree program. Therefore it is necessary that each prospective appli-
cant discuss the opportunity for enrollment with the Departmental
nel executive prior to admission of an application for admission to the Graduate College. The minimum requirements for admissi-
on to this program are close of the Graduate College. The final decision on acceptance of any applicant meeting minimum require-
ments for the Master of Science degree program will rest with the Division staff of Oral Diagnosis.

Staff: associate professor Whiteman; assistant professor Erbe, Fleming, Hammond; instructors Horton, Kielze, Merihin, Syp

Courses

Admissions

90-107 Oral Biology                                                                 1 a.h.
Clinical and practical participation between doctor and patient. 16 clock hours, junior year
91-108 Practice Management A                                                      1 a.h.
Organization and management of dental office when applications of accounting and budgeting. 16 clock hours, junior year
90-109 Practice Management B                                                      1 a.h.
Supervised clinical experience in dental screening and evaluating procedures; diagnosis- making and treatment of patient problems; restorative and operative restorative treatment. 32.5 clock hours, senior year

Dental Radiology

90-106 Dental Radiology for Dental Hygiene Students                               1 a.h.
Lecture and instruction in radiographic technique, important in dental hygiene; 16 clock hours, first year
90-107 Dental Radiology for Dental Hygiene Students                               1 a.h.
Supervised clinical experience in taking dental radiographs, roentgen and measuring film. 30 clock hours, second year

93-101 Oral Biology                                                                 2 a.h.
Recent advances in oral biology: dynamic concepts of microsized tissues; prevention of oral diseases; fluorides and antiseptics in dentistry
93:103 Oral Biology                                                                 2 a.h.
Lectures, seminar, laboratory; physiology of oral cavity; speech pathology; clinical evaluation
93:125 Problems                                                                   or art.
Small research projects pertaining to recent developments in oral biology

For Graduates

93:291 Mineral Metabolism and Dental Caries                                    2 a.h.
Structure in relation to disease and metabolism of bone substances in relation to normal and abnormal dental diseases
93:292 Physiology and Structure of Bone                                         2 a.h.
Histology, physiology, pathology of bone: reference to growth and resorption, development, functional integration of bone tissue in pathological states such as developmental disturbances, inflammatory diseases, disturbances of metabolism, tumors
93:293 Topics in Oral Biology                                                   2 a.h.
Seminar on recent developments in oral biology
93:294 Research Techniques in Oral Biology                                      2 a.h.
Includes theory and practice of preparation of causes for light microscopy; preparation of sections for botany and zoology and techniques used in delineating them
93:295 Research in Oral Biology                                                 or art.
93:296 Biology of the Periodontium and Pulp                                    3 a.h.
Normal structure of periodontium and pulp; their growth and development
93:297 Practice Teaching                                                         or art.
Supervised practical experience in clinics and laboratory teaching
Oral Pathology

Oral Pathology

Department head: Allen K. Fisher

D.EGs offered: M.S.

The main objectives of the Department of Oral Pathology are to provide basic instruction in oral and other health professional students on diseases affecting oral structures, 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 training 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 clinics 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 p-contents in clinical chemistry. Special facilities for studies in biochemistry and pathology of tissue metabolism are used mainly for graduate student and staff research. Additional training, particularly in histologic and histochemistry, 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 limit 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 acceptance 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 at least 2.0 and satisfactory scores in the Graduate Record Examination Aptitude Test and in the Advanced Test on either biology or chemistry. Final decision on acceptances 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 laboratory practice of oral pathology under staff 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:

69:203 General and Systemic Pathology 4 a.h.
82:204 Oral Pathology 4 a.h.
82:211 Cytology 4 a.h.
82:203 Basic Oral Microbiology 4 a.h.
99:165 General Bacteriology 3 a.h.
99:265 Clinical Microbiology 3 a.h.
83:206 Advanced Oral Pathology 6 a.h.
85:207 Advanced Clinical Pathology 8 a.h.

Master of Science Degree with Thesis

Candidates for the Master of Science degree are expected to develop substantial laboratory research experience into the mechanisms of professed 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.
Oral Surgery

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, disease prevention 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 at 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 36 months of full-time work and 35 semester hours of acceptable graduate credit.

The required courses are:

- 411: Analytical Chemistry 3 s.h.
- 65203: General and Systematic Pathology 4 s.h.
- 65205: Oral Pathology 4 s.h.
- 37211: Cytology 4 s.h.
- 37145: Fundamental Genetics 4 s.h.
- 68200: Basic Otolaryngologic Science 4 s.h.
- 22818: Biostatistics 3 s.h.
- 99165: General Biochemistry 3 s.h.
- 99167: Experimental Biochemistry 3 s.h.
- 49263: Clinical Biochemistry 3 s.h.
- 61616: Diagnostic Microbiology 5 s.h.
- 85206: Advanced Oral Pathology 6 s.h.
- 85207: Advanced Clinical Pathology 8 s.h.
- 85208: 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 oral comprehensive oral examination 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 most important research and contribution to the thesis. The examination will relate to the candidate's knowledge of basic pathologic processes and to the thesis. It will also cover the practices of oral pathology if the candidate is to be considered for the Certificate in Oral Pathology.

Staff: professors Fisher, Tates, assistant professors Shalus, Hammond.

Courses

85205 Pathology for Dental Hygienists 2 s.h.

Description of common diseases of the oral mucosa and adjacent structures and general understanding of basic principles involved in the diagnosis of them. The subject matter will include: diseases of the oral mucosa, dentition, oral pathology, and general medicine.

85103 Clinical Pathology 4 s.h.

Clinical study and practice of diagnosis of oral disease by laboratory methods and direct procedures of oral examination. The disease will be used in graded sequence under oral conditions. The defense plan shall be oral and clinical experience provided in off-campus assignments.

85044 Oral Pathology 4 s.h.

Lecture, conference, demonstration, laboratory course devoted to diagnosis, treatment, and pathology of oral disease. The subject matter will include: diseases of the oral mucosa, dentition, oral pathology, and general medicine.

85103 Advanced Oral Pathology 4 s.h.

Preparation for oral and maxillofacial surgery. In addition to the above courses, this program includes a clinical experience in oral and maxillofacial surgery. The candidate must have completed the above courses and have a minimum of 3 years of clinical experience at an accredited institution. The program includes a clinical experience in oral and maxillofacial surgery. The candidate must have completed the above courses and have a minimum of 3 years of clinical experience at an accredited institution.

85207 Advanced Clinical Pathology 4 s.h.

Prerequisites for this program include intensive training in diagnosis by laboratory methods, guidance provided by a mentor and the candidate must have completed the above courses and have a minimum of 3 years of clinical experience at an accredited institution.

85104 Research in Oral Pathology 2 s.h.

Research in the above program provides an opportunity for the candidate to become an independent researcher and to contribute to the research and clinical training of others. The candidate must have completed the above courses and have a minimum of 3 years of clinical experience at an accredited institution.

Oral Surgery Department Head: Mark L. Hale

Degree offered: M.D.

The Department of Oral Surgery is involved in both undergraduate and graduate education of dental students. It combines clinical and didactic teaching 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 as a basis not only for specialty training but as preparation for investigation, teaching and continuing service through professional growth.

Staff: professor Hale, associate professors Higa, Thatcher, assistant professors Wolfrom, instructor McCutney, nurse clinician Goodwin.

Courses

85044 Oral Pathology 4 s.h.

Principles and methods of oral pathology, including and differentiation for special oral conditions, the principles of oral pathology, and the importance of oral pathology.

85104 Oral Surgery I 3 s.h.

Basic principles of oral surgery, infections and emergencies for correction, evaluation of oral and maxillofacial surgery, the development of the surgical skill, and emergency care.

85105 Oral Surgery II 3 s.h.

Techniques of microscopic and minor oral surgery procedures, 16 clock hours clinical experience as first assistant in oral surgery clinics, 12 clock hours junior surgery.

85106 Oral Surgery III 3 s.h.

Clinical experience in the surgical treatment of oral and maxillofacial surgery. 12 clock hours of junior surgery, as first assistant.

85107 Oral Surgery IV 3 s.h.

Clinical experience in the surgical treatment of oral and maxillofacial surgery. 12 clock hours as junior, as first assistant.

85108 Oral Surgery V 3 s.h.

Clinical experience in the surgical treatment of oral and maxillofacial surgery. 12 clock hours as junior, as first assistant.

85109 Oral Surgery VI 3 s.h.

Clinical experience in the surgical treatment of oral and maxillofacial surgery. 12 clock hours as junior, as first assistant.

85110 Oral Surgery VII 3 s.h.

Clinical experience in the surgical treatment of oral and maxillofacial surgery. 12 clock hours as junior, as first assistant.

85111 Oral Surgery VIII 3 s.h.

Clinical experience in the surgical treatment of oral and maxillofacial surgery. 12 clock hours as junior, as first assistant.

85112 Oral Surgery IX 3 s.h.

Clinical experience in the surgical treatment of oral and maxillofacial surgery. 12 clock hours as junior, as first assistant.

85113 Oral Surgery X 3 s.h.

Clinical experience in the surgical treatment of oral and maxillofacial surgery. 12 clock hours as junior, as first assistant.
Pedodontics
Department Head: David P. Pendola
Degree offered: M.S. (M.D.) (M.D. 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 to 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, contribute to committees, memberships, and honor societies. They serve as editors for several professional journals and national granting agencies. They also participate regularly in continuing education programs for dentists and other health science personnel.

Staff: associate professors Parke, Full, Johnson, Wei, Brown; assistant professor Walker

Courses
90:161 Pediatric Dentistry and Treatment 2 a.h.
Conception of growth and development, behavior management and preventive care for pediatric patient
90:182 Pediatric Dentistry 1 a.h.
Basic Pediatric Prerequisites performed in laboratory
90:184 Clinical Pediatric Dentistry 2 a.h.
Comprehensive clinical management of pediatric patient
Prerequisites: for Graduates

90:261 Pediatric Literature Review I  cr. avr.
Dissertation of growth and development, behavior management, preventive care, and the effect of fluoride on the health of pediatric patient
90:262 Pediatric Literature Review II  cr. avr.
Dissertation of preventive orthodontia, methods, orthodontia, the effect of fluoride on the health of pediatric patient
90:263 Pediatric Literature Review III  cr. avr.
Orthodontic evaluation of pediatric dentition
90:264 Pediatric Literature Review IV  cr. avr.
Dissertation of comprehensive clinical management and orthodontia, affect on child patient
90:265 Research Projects  cr. avr.
90:266 Practice Pediatric Dentistry  cr. avr.
Dissertation of comprehensive clinical management and orthodontia, affect on child patient
90:361 Thaene Preparation  cr. avr.
Preparation of original research project and presentation of thesis
90:362 Introduction to Advanced Pediatric Dentistry 2 a.h.
Preparation of original research project and presentation of thesis
90:363 Pediatric Therapy 1 a.h.
Preparation of original research project and presentation of thesis
90:364 Hospital Oral Health 1 a.h.
Preparation of original research project and presentation of thesis
90:365 Pediatric Hospital Rehabilitation 1 cr. avr.
Preparation of original research project and presentation of thesis
90:366 Pediatric Hospital Rehabilitation II  cr. avr.
Preparation of original research project and presentation of thesis
90:367 Pediatric Pedodontology  cr. avr.
Preparation of original research project and presentation of thesis
90:368 Pediatric Periodontics  cr. avr.
Preparation of original research project and presentation of thesis

Periodontology
Department of C. M. Fradish
Degree offered: M.B. (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 entail 24 calendar months of full-time effort. The applicant must be financially prepared to undertake a research project with an investigator. Qualified persons may apply for postdoctoral fellowships from the National Institutes of Health or the American Society for Periodontology. However, these fellowships should be received prior to matriculation.

In compliance with the basic regulations of the Graduate College for programs of higher education in dentistry, these requirements must be met:

- A satisfactory completion of a minimum of 60 semester hours of all graduate level courses, to be divided as follows: A. 33 hours in the major field of periodontology and selected courses offered by the departments within the College of Dentistry
- 12 semester hours in a minor field of biochemistry, physiology, or microbiology
- 13 semester hours in the counseling areas of micromasonry, mathematics, statistics and analytical chemistry

Preparation of an acceptable thesis based on original research; not more than 16 semester hours of research credit; 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 a functional character and does not duplicate semester examinations

The head of the Department serves as the student's advisor and 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 periodontology. 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 a 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: assistant professor Fradish; associate professor Lawson; assistant professor Bergstrom, Rubright, instructor Katliff

Affiliated or part-time staff: clinical assistant professor Bleding; instructors Collins, Cooper

Courses
90:361 Periodontology 2 a.h.
Preparation of original research project and presentation of thesis, histology and histopathology of the periodontium and oral physiology techniques employed, research year
Programs in preventive and community dentistry have been designed to provide dental students with experiences to increase their awareness of current 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 care teams and members of communities in Iowa. Under the community as the student—attending and participating in a variety of activities but not to make the student aware of the societal obligations or to the same extent as others who continue in 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 further 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 planning careers teaching preventive and community dentistry in dental colleges, administering dental health programs and researching in the field of preventive and community dentistry.
Removable Prosthodontics

Staff: professor Thayer; associate professor Miller; assistant professors DeCounter, Sandre; instructor Stoner
Affiliated staff: LaVelle, Osborn, Thompson, Tong

COURSES

84265 Clinic in Prosthodontics Technique Lecture 2 a.h.
84266 Clinic in Prosthodontics Technique Laboratory 4 a.h.
84267 Laboratory exercises in construction of complete and removable partial dentures
84268 Clinic in Removable Prosthodontics 5 a.h.

Primary for Graduates

84269 Literature Review: Removable Prosthodontics cr. arr.
84270 Technique Methods: Removable Prosthodontics cr. arr.
84271 Advanced Clinical Prosthodontics cr. arr.
84272 Research: Removable Prosthodontics cr. arr.
84273 Research: Removable Prosthodontics cr. arr.
84274 Research: Removable Prosthodontics cr. arr.
84275 Research: Removable Prosthodontics cr. arr.
84276 Research: Removable Prosthodontics cr. arr.
84277 Research: Removable Prosthodontics cr. arr.
84278 Research: Removable Prosthodontics cr. arr.
84279 Research: Removable Prosthodontics cr. arr.

* May be taken during any semester with permission of Department head

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 advisor. 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 advisor 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."
College of Education

Administrative Staff

Dean: Howard R. Arnes
Dean Emeritus: Bette R. Peterson
Associate Dean Emeritus: A. V. Dyna
Associate Deans Emeritus: Henry C. Defino
Assistant Dean Emeritus: Stuart C. Gray, Roy A. Wann, Owen L. Springer
Principal, University Hospital School: Paul D. McKeever
Director, Iowa Testing Programs: William B. Defino
Director, Iowa Center for Research in Education and Community Learning: Hartman D. Blum
Director, Educational Information Center: Pamela D. Dunn
Director, Educational Research and Evaluation: C. R. Hendrick
Education Psychology Librarian: Anne G. Dena
Curriculum Laboratory Librarian: Grace M. Spangle

Division Chairmen

Division of School Administration: John W. O'Neal
Division of Educational Administration: William R. Lane
Division of Elementary Education: Jerry N. Kuhn
Division of Educational Psychology, Measurement and Statistics: Paul J. Blum
Division of Secondary Education: John E. McAdam
Division of Counselor Education: Albert R. Hoad
Division of Special Education: Archie McElroy

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 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 and secondary 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 doctorates in their teaching fields, and 93 percent have had teaching or administrative experience in the public schools.

A major strength of the College is its 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 Educational studies and develops curriculum 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 are 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-retarded 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 Requirement
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 these 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 major 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, work, stories and plays, and introduce them to science, math, language 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 structure of curricular materials suitable for school-age children, and of the methodological 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 nursery school-kindergarten endorsement 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 advisers regarding special certification requirements.

Students interested in duel 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. Three 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 Courses
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:01)
7P: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:181 Methods: Elementary-School Social Studies 2 s.h.
7E:153 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:191 or 192 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 for 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 Preteacher Education
All entering freshmen who indicate on the University application form that they wish to pursue an elementary-education program will be admitted to the preteacher-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 preteacher-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 preteacher-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 element-
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 55 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 ap-
plicant's total record, a personal interview and the ap-
plicant’s record in the pre-education practicum (75:91).

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 jun-
ior-senior sequence by December 15 of the junior year.

Graduate students are subject to the same application dead-
lines, selection procedures and admission and course require-
ments 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 fac-
ulty members, it may be necessary to limit the number of stu-
dents admitted to the junior-senior sequence in elementary
education. In that case, the best-qualified applicants will be ad-
mitted.

Secondary Education

Secondary school teaching requires an understanding and ap-
preciation 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, agricul-
ture, 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 halls and perform
other administrative duties. The growing use of teaching ma-
chines, programmed instruction and teacher aids help eliminate
many routine tasks.

Many teachers are also involved in supervision of student
activities, including clubs and social functions, and become in-
volved in nonacademic affairs as interested members of the com-
munity 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
specializations or special certificates 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 credit
(18-24) in a field outside the major to qualify to teach in the
second field.

The student must complete this foundation program of profes-
sional courses during the sophomore and junior years:

| 75:100 Introduction: Secondary-School Teaching | 2 s.h. |
| 75:91 Pre-Education Practicum | 2 s.h. |

(To be taken concurrently with 75:100; students with
prior equivalent experience exempt from 75:91 upon
recommendation of director of student teaching.)

| 75:75 Educational Psychology and Measurement | 3 s.h. |

(Graduate students permitted to substitute appropri-
ate graduate courses for 75:75 and 75:100.)

Juniors who expect to do their senior semester of student teaching
in the fall semester of the senior year must take methods courses
during either the preceding academic year or the summer ses-
sion. Majors in art, music and physical education must earn
credit in elementary and secondary special methods and in ele-
mentary and secondary student teaching.

Professional Semester

Senior students may enroll for the professional semester (75:191
Observation and Laboratory Practice) in either the fall or spring
semester. In some major fields, students will be expected to
enroll in both 75:191 and 75:192. 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 75:75, 75:91 and 75:100 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:

76:100 Individual Field Projects in Laboratory Practice 1–3 s.h.
75:187 Seminar in Student Teaching: Curriculum and Instructional Problems 2 s.h. (special sections in English, Social Studies, Mathematics, etc.)
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 Midwest Consortium 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 the 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 1–3
7U:32–33 Instructional Methods and Procedures in Special Education 2–3
7U:135 Mental Retardation 2
7U:192 Laboratory Practice in the Education of the Mentally Gifted Child (night work at the elementary level)

Coursework required by Elementary Education:
7E:91 Exploratory Experience in Teaching (or equivalent)
Certification in Elementary Education and Elementary Special Education with Emphasis in the Physically Handicapped

Coursework required by Special Education:
7E:100 Introduction to Elementary Teaching
7P:75 Educational Psychology and Measurement
7V:101 Operation of Audiovisual Equipment plus any five of the following:
7E:160 Methods: Elementary-School Language Arts
7E:161 Methods: Elementary-School Social Studies
7E:162 Methods: Elementary-School Science
7E:163 Methods: Elementary-School Mathematics
7E:164 Methods: Elementary-School Reading
7E:166 Methods: Early-Childhood Education II

Special-education majors satisfy the area of specialization requirement for elementary education by completing the specialization coursework.

Certification in Elementary Education Only, with Emphasis in Mental Retardation

Coursework required by Special Education:
7U:3-30 Introduction to and Observation of Exceptional Children I-II
7U:33-33 Instructional Methods and Procedures in Special Education I-II
7U:139 Orientation to Rehabilitation of the Physically Handicapped Child
7L:135 Introduction to Speech and Hearing Processes and Disorders
7U:191 Laboratory Practice in Education of the Physically Handicapped Child (eight weeks)

Certification in Secondary Special Education (Mental Retardation) with a Major in Psychology

Coursework required by Special Education:
7U:30-31 Introduction to and Observation of Exceptional Children I-II
7U:32-33 Instructional Methods and Procedures in Special Education I-II
7U:185 Mental Retardation
7U:143 Vocational Resources for Exceptional Children
7U:192 Laboratory Practice in the Education of the Mentally Retarded Child (one semester at the secondary level)

Coursework required by Psychology:
7C:101 Introduction to "College of Liberal Arts"
7C:102 Principles of Guidance
7E:140 Methods: Elementary-School Language Arts
7E:164 Methods: Elementary-School Reading
7P:75 Educational Psychology and Measurement
7P:109 Socialization of the School-Age Child
7V:100 Introduction to Social Psychology
7V:101 Operation of Audiovisual Equipment
7V:110 Selecting and Utilization of Educational Media

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, industries, 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 interdisciplinary 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.

Educational 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.

Doctoral 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.

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 departments of public
instruction, 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, middle 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 of success-
ful 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 principals; planned both as a vocational one and as the first year in
a two-year sequence leading to the educational specialist de-
gree; complements 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 research
skills should follow the thesis program.

Doctoral Program
Purpose: To prepare individuals for research, counseling and
educating 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, activity directors, financial aids advisors, 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.D. Program
Purpose: To provide specialized professional training in college student-pupil 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 students in a small college or director of admissions or director of students 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 consult with other student services 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- 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 administration 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.

College of Education

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; adminis- tered 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; major colleges; or positions as research directors in science education

Social Studies Education

Master's Program
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 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; brain injured; and hearing impaired; specific master's degree programs are offered in mental retardation and in behavior disorders; program 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 emphasizes 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, postgraduate-curriculum program; designed primarily for practitioners who wish to add 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 practice in a second area of exceptional ability to provide additional depth of training and experience; in addition, he or she takes advanced coursework and seminars in the various areas of specialization to develop competence in the administration of special-education, he or she takes coursework in theory and practice in the Division of Educational Administration, and a series of courses, short-term practice, observation and internship experiences in special-education administration; internships include antise in local programs of special education, state departments and metropolitan special-education programs.

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 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.

(For detailed program requirements and special admission requirements, see the College of Education publication, ‘Admission Standards and Grading and Graduation Requirements, see the ‘Graduate College section of the Catalog.)

College of Education

70434 Practicum in Vocational-Educational Counseling 1 or 2 h.
Practice in counseling office with vocational and educational problems and supervised experience in University Counseling Service; prerequisite: 70433.
70450 Practicum in Personal-Adjustment Counseling 1 or 2 h.
Practice in counseling office with personal and interpersonal problems; supervised experience in University Counseling Service; prerequisite: 70453.
70463 Practicum in Community Research in Counseling 1 or 2 h.
Prerequisite: consent of instructor.
70465 Practicum in Vocational-Educational Counseling Education 1 or 2 h.
Prerequisite: consent of instructor.

Educational Administration

70501 Foundations of School Administration 3 or 4 h.
For major in school administration, emphasis on processes common to all phases of educational administration; conceptual framework for administration of education and use and development of personnel; preparation for advanced work in educational administration; prerequisites: 70412, 7053.
70502 Computer Applications in Education 2 or 3 h.
Principles of computerized data processing, and computers with applications in educational administration, instruction and research.
70510 Integrative Systems Analysis and Operational Research in Education 2 or 3 h.
Applications of systems analysis and operations research methods in educational planning and decision making; includes linear programming, queuing, decision making, network analysis; and network programming; 70412 and 7053.
70530 Principles of Educational Supervision 3 or 4 h.
Responsibility for the principal, school administration and supervision of teaching personnel; methods of observing, planning, motivating, evaluating, guiding, counseling, discipline; business administration; prerequisites: 70520 or consent of instructor.
70591 Elementary-School Principals 3 h.
Organization, supervision and administration of elementary schools; curriculum development, instructional practice and personnel relationships; role analysis and supervision characteristics; basis for administration program 70591.
70593 Intermediate-Education School Organization Patterns 3 h.
Organizational approaches designed with specific situations in emerging patterns and their effects on instructional procedures.
70599 Current Issues in the Structure and Governance of Education 3 or 4 h.
Organizational structure of roles of educational administration at local, intermediate and central levels; role of policy and procedure for satisfactory administration at all levels.
70610 School Discipline 3 or 4 h.
Relevance of state and federal laws to discipline; establishment of a school plan for discipline; principles of deprivation and discipline; principles of due process; implications for discipline; principles of due process; implications for discipline.
70611 School Government and Policy-making in Public Education 3 or 4 h.
Analysis of school governance, planning, control, and participation in determining the nature of system of public education and its effect on public education; 7053.
70614 Social and Political Issues in Public Education 3 or 4 h.
Theories and perspectives concerning the social and political problems of American education; major issues in public education; impact upon education, ideologies, and educational change; 7053.
70630 Educational Administration 3 or 4 h.
Advanced study of educational administration; analysis of educational administration; procedures and considerations of data for school administration; prerequisites: 70510 and consent of instructor.
70635 Research in Educational Administration 3 or 4 h.
Advanced study of research methods in educational administration; thesis and supervised research in educational administration; prerequisite: 7053.

Preparatory Work

70470 Introduction to Student-Personnel Work 5 h.
Survey of philosophy and skills of student-personnel workers; emphasis on active approach to personnel planning and decision making.
70471 The College Student 1 to 3 h.
Psychological and sociological characteristics of college students and institutions for higher education; information relevant for collegiate counselors during first half of career for any academic hour of credit.
70472 Seminar: The Juvenile-Personality 2-3 h.
Study of personality as related to mental development of personality in coping with life tasks and problems in different life stages; each life task includes integrative orientation, self-concept development, role-assumption in social context, and seminar focus on implications of normal personality for counselor behavior and interaction.
70473 Seminar: The Adolescent-Personality 2-3 h.
Study of personality as related to mental development of personality in coping with life tasks and problems in different life stages; each life task includes integrative orientation, self-concept development, role-assumption in social context, and seminar focus on implications of normal personality for counselor behavior and interaction.
70477 Seminar: Internship in Student-Personnel Work 5 h.
Theory, philosophy and skills of student-personnel workers; emphasis on active approach to personnel planning and decision making.
70534 Vocational Guidance in Educational Counseling 1 or 2 h.
Supervision of college counseling resources; emphasis on the role of college counselor in the total counseling process.
70540 Seminar: College-Personnel-Private Research 1 or 2 h.
Lectures, discussions and seminars on selected college counseling research projects may be repeated for credit.
70541 Seminar: Psychological Aspects of Disability 1 h.
May be repeated.
70580 Supervised Practicum in Rehabilitation Procedures 1-2 h.
May be repeated, prerequisite consent of instructor.
70581 Supervised Field Work, Rehabilitation Procedures 2 h.
Full-time work, taken on regular semester basis; prerequisite consent of instructor.
70589 Personal-Adjustment Counseling 1 h.
Survey of theoretical approaches, techniques of counseling clients with personal and interpersonal problems; prerequisites: 70412, 7053.
70593 Seminar: Applications in Counseling Research 2 or 3 h.
Application of experimental methodology and laboratory procedures to study of problems in counseling research; prerequisites: 70593.
70595 Counseling Processes and Outcomes 3 h.
Counseling processes as they occur in counseling and psychotherapy procedures; helps clients find appropriate adjustments in appropriate field; prerequisite consent of instructor.
70596 Survey of Current Issues in Counseling 3 h.
Current issues of counseling methods and techniques; prerequisites: 70593 or enrollment approval by U.S. Counseling.
70597 Seminar: Divorce Counseling and Psychotherapy 2 h.
Survey of theoretical and practical issues involving the counseling and psychotherapy of the divorced individual; prerequisite: 70596.
70598 Advanced Seminar in School Counseling 3 or 4 h.
Supervision of graduate students in counseling techniques; emphasis on practical applications; although enough theory present to make valuable experience for graduate students interested in appropriate field of work; prerequisite consent of instructor.
70599 Seminar in Behavior-M 3 h.
Survey of current and emerging techniques of counseling therapy; emphasis on practical applications; although enough theory present to make valuable experience for graduate students interested in appropriate field of work; prerequisite consent of instructor.
70600 Advanced Seminar in School Counseling 3 or 4 h.
Supervision of graduate students in counseling techniques; emphasis on practical applications; although enough theory present to make valuable experience for graduate students interested in appropriate field of work; prerequisite consent of instructor.
70601 Topics in Guidance and Counseling Education 1-2 h.
Prerequisite consent of instructor.
70602 Seminar: Special Applications in Research in Counselor Education 1 or 2 h.
Prerequisite consent of instructor.
79290 Seminar: Value Problems in the Administration of American Education 3 s.h.
Philosophical and sociological issues which underlie American system for administration of public education; investigation of various issues as to place of both conformity and dissent in democratic society and democratic educational system; contemporary issues used to provide focus for examination of these issues; some as 70200.
79293 M.A. Thesis in Social Foundations and Comparative Education 3 s.h.
Prerequisite: consent of instructor
79295 Ph.D. Thesis in Social Foundations and Comparative Education 3 s.h.
Prerequisite: consent of instructor
79354 Higher Education 3 s.h.
Emphasis placed on development and evaluation of educational programs; suggested planning principles and curricular analysis and application gained through establishment of working relationship with ongoing educational program; activities individualized to meet various backgrounds and objectives; same as 79:341.
79362 Learning Strategies for Higher Education 3 s.h.
Role of health specialist as teacher consultant; variety of learning strategies explored through seminars, observations, interrogations and experiences within actual classroom environment; practical knowledge individualized to meet various backgrounds and objectives; same as 79:362.
79475 Post-High-School Faculty Development Workshop 1 or 3 s.h.
Designed to provide post-high-school instructors with work in other disciplines some or same aspect of professional education; workshop topics may include programs for upgrading of administrative and supportive personnel as well as faculty members in post-high-school institutions.
79489 Higher Education Colloquium 3 s.h.
Students and faculty invited to submit seminar topics and other papers for consideration; projects must be sponsored by at least one faculty member in higher education, and must be approved by Departmental Executive; no project offered more than twice under this description; students may repeat course once for credit up to a total of six hours.
79511 Problems in College Teaching 2 s.h.
Principle of course planning, teaching methods, evaluation techniques and assessment of instructional objectives and successes.
79513 Structure of Organization and Administration of American Higher Education 3 s.h.
Principles of various types of institutions: community college, college, university, technical, professional, liberal arts; policies determination at federal, state and local levels.
79520 Intern Seminar 2 s.h.
Designed to prepare interns to assume faculty or administrative role in community college teaching, preparing intern in community-college teacher preparation program or preparing to enroll in community-college internship program during summer or fall term of internship year.
79545 Workshop Higher Education 3 s.h.
Admissions officer in post-high-school educational setting; legal, financial, and staffing norms of institutional and nonscholastic education.
79562 Facilitating Learning in Higher Education 3 s.h.
Role of health specialist as teacher consultant; variety of learning strategies explored through seminars, observations, interrogations and experiences within actual classroom environment; practical knowledge individualized to meet various backgrounds and objectives; same as 79:362.
79598 Administration of Teaching and Education Programs 2 s.h.
Administrative role in pre-high-school educational setting; legal, financial, and staffing norms of institutional and nonscholastic education.
79601 Seminar: College Teaching 1 s.h.
Survey of programs in organization, administration and curriculum.
79602 College-Teaching Workshop 8 s.h.
79603 Individual Instruction in Higher Education - 1 or 3 s.h.
Prerequisite: consent of instructor
79604 Seminar: Higher Education - 1 or 3 s.h.
Analysis of special problems in promotion and preservation of one major research project.
79605 Seminar: Recent Research in Higher Education 1 or 3 s.h.
Assessment of college environments and student potential, effects of college experiences upon student achievements, aspirations and personal development.
79615 Curriculum Development in Higher Education 2 or 3 s.h.
Prerequisite: consent of instructor
79617 Administrative Decision-Making in Higher Education 2 or 3 s.h.
Administrative problems in higher education using simulated materials.
79621 Seminar: Administration in Higher Education 2 s.h.
Prerequisite: consent of instructor
79625 Research and Allocations in Higher Education 2 s.h.
Examination of economics of higher education, sources of support for higher education, allocation of institutional resources, fiscal planning and control, tax incentives.
79630 College Teaching Internship 4 or 6 s.h.
Full summer teaching experience consisting of supervised one-half time teaching load at a community college level or an unsupervised load in a free-standing instruction-concurrent instruction-responsivity assignment; prerequisites: 79475, consent of instructor and approval by cooperating institution.
79635 Practicum in Higher Education 2 or 6 s.h.
Prerequisite: consent of instructor
79640 Seminar: History and Philosophy of American Higher Education 2 or 3 s.h.
Discussions of scholarly literature and consideration of special topics; access to European foundations; relationship to development of culture, intellectual and institutional life of United States; effects of historical and philosophical foundations on present and future of higher learning in U.S.; prerequisites: 79612 and appropriate background in philosophy and history, or consent of instructor.
79684 Seminar: Health-Care Education 1 s.h.
Focus for examining issues and special problems in health-care education, changing image for role of academic studies in role of health-care educator; may be repeated; prerequisite: consent of instructor.
79689 M.A. Thesis in Higher Education 3 s.h.
Prerequisite: consent of instructor
79690 Seminar: Recent Research in Health-Care Education 3 s.h.
Prerequisite: consent of instructor
79695 Ph.D. Thesis in Higher Education 3 s.h.
Prerequisite: consent of instructor
79700 Educational Psychology, Measurement and Statistics 3 s.h.
Factors in mental development and classroom learning; child and adolescent character formation; problems in classroom management; construction, use, interpretation, and evaluation of educational tests; open only to undergraduates; same as Psychology 31:11.
79702 The Learner 2 s.h.
Classification of educational learning; individual differences in physical, emotional and intellectual factors.
79704 Child Development 2 s.h.
Survey of Child Behavior 5020 and Psychology 31:11; not open to sophomores.
79705 Personality and socialization of normal child; assessment and causes of typical behavior patterns; prevention of abnormal behavior disorders.
79709 Socialization of the School-Age Child 2 s.h.
Social development, preschool education, development of attitudes and interests, effects of social status on social development.
79734 Educational Psychology and Measurement 3 s.h.
Psychology in teaching and learning; developmental concepts, social processes, language and thought; personality and moral habits, models of teaching and research, theory and applications of learning process, same as Psychology 31:11.
79735 Advanced Socialization Research Methods 3 s.h.
Readings and discussion related physical, psychological and cultural dimensions of behavior in contemporary society; traditional academic literature on antecedents supplemented by fiction, film and 79515 Introduction to Programmed Learning 2 s.h.
Theoretical development of programmed learning, teaching machines and other devices for use in acquiring learning, model programs for automated teaching; discussion of programing and reporting research; evaluation of current methods in educational research; prerequisite or consent: 79143.
79740 Educational Research Methodology 3 s.h.
Process for planning, conducting and reporting research; evaluation of current methods in educational research; prerequisite or consent: 79143.
79745 Methodology for Research in Behavioral Methods 3 s.h.
Analysis and interpretation of research data; descriptive statistics (frequency distribution, correlation, simple regression, variability): introduction to statistical inference (normal curve sampling theory, simple least squares) introduction to correlation and linear regression; same as Statistics 25B:4 and Psychology 31:13.
78-327 Seminar: Aesthetic Education 2 or 3 s.h.
Theory of aesthetics as related to teaching, instructional and learning models, nature of aesthetic experience in visual and related arts; material arts as related to other disciplines in education; survey of multi-discipline programs; same as 78-325; may be repeated.
78-319 M.A. Seminar: English Education 2 or 3 s.h.
Discussion of significant developments in English education from primary and secondary and secondary and college levels; prerequisite: consent of instructor; same as English 5290.
78-331 Workshop for Secondary-School Journalism Teachers 2 or 3 s.h.
Selected problems faced by editors of newspapers and magazines; emphasis on photography, editorial content, curriculum development, mass communication media, basic techniques and other related journalistic activities; same as Journalism 5115.
78-335 Seminar: Mathematics Education 2 s.h.
Prerequisite: consent of instructor.
78-339 Problems in Mathematics Education 2 s.h.
Prerequisite: consent of instructor. Review of research in teaching of mathematics, K-12 including examination of teaching of algebra and geometry, grade placement of content and methodology; same as Mathematics 5225.
78-341 General Music in Secondary Schools 2 s.h.
Analysis of various art methods, art forms and techniques in music education, including selection of appropriate instrumental and vocal techniques.
78-342 Special Studies: Music Education 2 s.h.
Prerequisite: consent of instructor.
78-344 Music Education Workshop: General and Choral Music 2 s.h.
In the Secondary School 1 s.h.
78-345 Public School Curriculum in Physical Education 2 s.h.
Prerequisites: social and psychological factors influencing curriculum in physical education, current trends, same as Physical Education for Men 3725.
78-352 Seminar: Science Education 2 or 3 s.h.
Research of reports of research projects presented in professional areas, program of research at M.S. and Ph.D. levels, guest lecturers, group discussion, and analysis of individual presentations; review of all Ph.D. candidates each semester. One registration required of all master's candidates, same as 99-352.
78-351 Special Problems in Science Education 2 s.h.
Opportunities for advanced students to develop projects leading to detailed dissertation studies; evolution of research problems, literature surveys and analysis, utilizing literature and analysis of specific problems; review of all Ph.D. candidates in science education; may be repeated; same as 97-351.
78-354 Workshop in Elementary Art Education 2 or 3 s.h.
Study and analysis of fundamental concepts derived from art education and related disciplines; selection of content and methodology of selected learning experiences; current literature, current issues in art education; same as 78-354.
78-350 Problems in Supervision 2 s.h.
Prerequisite: consent of instructor.
78-362 Field Service Project in Secondary Education 2 s.h.
Prerequisite: consent of instructor.
78-353 Seminar: Science Education 2 s.h.
School evaluation for teachers as well as prospective and practicing administrators; emphasis on techniques of data collection and analysis with specific problems related to implementation of program development and improving implementation; includes evaluation of various educational programs and techniques with particular emphasis on self-evaluation process.
78-360 Educational Specialist Research in Secondary Education 2 s.h.
Prerequisite: consent of instructor.
78-348 Seminar: Critic Art and Art Education 2 or 3 s.h.
Analysis and evaluation of current concepts of art children and art education, perception, creativity and art education; historical development of theories of art education; same as English 5425.
78-348 Research in Art Education 2 s.h.
Prerequisites: consent of instructor. Advanced study of research method and design; applies to thesis or dissertation preparation, may be repeated as seminar study or as special problems area; may be repeated; same as 10-324 and 10-325.
78-367 Research in Science Education 2 s.h.
Prerequisite: consent of instructor. Advanced study of research methodology and design; applies to thesis or dissertation preparation, may be repeated as seminar study or as special problems area; may be repeated; same as 10-324 and 10-325.
78-441 The Psychology of Teaching Music 2 s.h.
Special Problems in the social sciences, motivation, intelligence, memory, motor co-ordination, musical abilities of children, teaching methods, etc.
78-442 Music Education: Advanced Observation and Laboratory 2 s.h.
Prerequisite: consent of instructor.
78-443 Measurement and Evaluation in Music 2 s.h.
Prerequisite: consent of instructor. Techniques of evaluation, testing construction and standardizing tests in music.
78-444 Research in Music Education 2 or 3 s.h.
78-445 Social and Psychological Factors in Music Education 2 or 3 s.h.
Prerequisite: consent of instructor.
78-481 M.S. Thesis 2 or 3 s.h.
Prerequisite: consent of instructor.

Special Education
77-300 Introduction to and Observation of Exceptional Children 2 s.h.
Guest lectures on various topics with emphasis on the field of special education; special topics in recent times.
77-310 Problems in Special Education 2 s.h.
Prerequisite: consent of instructor. Identification of problems in special education and development of plans for conducting and reporting research of special research.
77-311 Seminar in Special Education 2 s.h.
Prerequisite: consent of instructor.
77-325 Instructional Methods and Procedures in Special Education 2 s.h.
77-321 Research in Special Education 2 s.h.
Prerequisite: consent of instructor.
77-322 Research in Special Education 2 s.h.
Prerequisite: consent of instructor. Research in special education.
77-323 Research in Special Education 2 s.h.
Prerequisite: consent of instructor. Research in special education.
77-324 Research in Special Education 2 s.h.
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Prerequisite: consent of instructor. Research in special education.
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Prerequisite: consent of instructor. Research in special education.
77-375 Research in Special Education 2 s.h.
Prerequisite: consent of instructor. Research in special education.
77-376 Research in Special Education 2 s.h.
Prerequisite: consent of instructor. Research in special education.
70-145 Curriculum Development and Methodology for the Mentally Retarded 3 s.h.
Basic aspects of curricular development for education mentally retarded at pre-
school, primary and intermediate levels, major objectives, selection in organization of curricular content, specific materials and methods for increasing mental retardees; evaluating techniques; observations in Pre-School; uses methods re-
quired for certification to teach mentally retarded, offered only in summer session.
70-146 Curriculum Development and Methodology for the Mentally Retarded 2 s.h.
Continuation of 70-145, but with emphasis on junior and senior high school programs for education mentally retarded; objectives; curriculum content; evalu-
tive techniques; high school credit and graduation for mentally retarded; development and introduction of work-study programs; observations in Pre-School may be taken independently of 70-146, same methods required for certification to teach mentally retarded, offered only in summer session.
70-181 Language for the Deaf I 3 s.h.
Readiness for multiple approaches to communicating language to deaf child, techniques for developing deaf child's understanding of and use of language, particularly in first four years of school. Selection and use of teaching materials.
70-182 Language for the Deaf II 2 s.h.
Continuation of 70-181, language requirements of second four years of school, prerequisite: 70-181.
70-183 Speech Training for the Deaf I 3 s.h.
Phonological underlying methods for teaching communication skills of deaf; speech development goals; phonetics in reference to basic forms and pronuncia-
tion.
70-184 Speech Training for the Deaf II 2 s.h.
Continuation of 70-183.
70-185 Education and Guidance of the Deaf 2 s.h.
History and philosophy of education of deaf in United States, facility for teaching deaf psychology and social adjustment of deaf during and after school life.
70-186 Observation and Student Teaching for the Deaf I 3 s.h.
Thirty to 30 observations of 45 minutes each during first year of training; written reports required, approved by director of training program; supervised and class-
room teaching.
70-187 Teaching Elementary Subjects to the Deaf 2 s.h.
Selected techniques and methods used in teaching elementary school subjects to deaf children.
70-188 Teaching Elementary Subjects to the Deaf II 2 s.h.
School curriculum for deaf, underlying rationale for each; problems encountered in, and materials available for, teaching these subjects.
70-189 Speech Testing for the Deaf 2 s.h.
Speech development, speech and language ability in deaf children.
70-180 Auditory Training for the Deaf 3 s.h.
Hearing, testing; techniques and evaluation of hearing; methods and objectives of auditory training for deaf.
70-1813 Auditory, Visual and Hearing Mechanics 2 s.h.
Prerequisite: consent of instructor.
70-1820 Observation and Student Teaching for the Deaf II or, arr.
Training of Observers during second year of training in accordance with requirements approved by director of training program required; supervised classroom teaching.
70-1821 Laboratory Practicum in Education of the Physically Handicapped Child or, arr.
Student teaching in University Hospital; special student teaching settings for those with multiple handicaps, prerequisite, consent of instructor.
70-1822 Laboratory Practicum in Education of the Mentally Handicapped Child or arr.
Prerequisite: consent of instructor.
70-1807 Tutorial Assistance or arr.
Helping child to talk; use in classroom with Handicapped Children; Community Action Programs; cooperative consent of instructor.
70-1828 Human Relations for the Classroom Teacher 2 s.h.
Relationships between teachers and pupils; teacher and teacher and other school personnel; teaching and community.
70-1832 Individual Special Education 2 s.h.
Undergraduate or arr.
Prerequisite: consent of instructor.
70-1833 Exceptional Children's Assessment, Research and Practicum 10 s.h.
Assessment current state of knowledge in special education (five hours a week, combined with working directly with handicapped children or adults) in precision writing (26 hours a week); prerequisite: consent of instructor.
70-230 Advanced Problems in Psychology of Exceptional Children 3 s.h.
Current psychological techniques in interpreting and evaluating exceptional chil-
dren. Prerequisite: consent of instructor.
70-235 Advanced Problems in Psychology of Exceptional Children 5 s.h.
Current problems of special education and educational personnel (arrangement for School Psychological Services I or arr.
Super and practical in psychological and educational evaluation in various University Units and in community schools; prerequisite: 70-233 consent of instructor.
70-236 Problems in Psychoevaluation Assessment of Children 3 s.h.
Techniques of psychoevaluation assessment; supervised practical in psychological and educational evaluation in university, school and community programs; prerequisite: consent of instructor.
70-237 Seminar: Community and Regional Services for the Handicapped 3 s.h.
Organization of community and regional services for mentally retarded; i.e., day care units, residential care, interchange with activity centers, experience provided in assessing need for services as well as planning for implementation of services; prerequisite: consent of instructor.
70-238 Educational Programs for Children and Youth with Behavior Disorders 3 s.h.
Systematic examination of educational models of behavior disorders and of psychopa-
thological services within various community agencies providing psycho-social-educational services for children and youth with behavior difficulties; prerequisite: consent of instructor.
70-239 Educational Children and Youth with Behavior Disorders I 3 s.h.
Teacher, behavior, principles, concepts, problems, issues, methods and procedures of specific educational programs concerning educational programs for children and youth with behavioral disorders; prerequisite: consent of instructor.
70-240 Educational Children and Youth with Behavior Disorders II 3 s.h.
Continuation of 70-239, prerequisite: consent of instructor.
70-241 Practicum: Educational Children and Youth with Behavior Disorders 3 s.h.
Practicum with children and youth with psychological disorders; taken concurrently with 70-239 and 70-242, prerequisite: consent of instructor.
70-242 Practicum: Educational Children and Youth with Behavior Disorders 3 s.h.
Continuation of 70-240, taken concurrently with 70-241 and 70-244, prerequisite: consent of instructor.
70-243 Practicum: Elementary School 1 s.h.
Administration of individual-intelligence tests and interpretation of test results; issues in psychological testing; factors which influence performance; prerequisite: 70-143 or 70-145 or consent of instructor.
70-244 Practicum: Elementary School 3 s.h.
Practicum with retarded children in School of Exceptional Children, prerequisite: consent of 70-243 and individual consent in School of Education; prerequisite: consent of instructor.
70-245 Practicum: Elementary School 5 s.h.
Practicum with retarded children in School of Exceptional Children, prerequisite: consent of 70-243 and individual consent in School of Education; prerequisite: consent of instructor.
70-246 Practicum: Elementary School 1 s.h.
Practicum with retarded children in School of Exceptional Children, prerequisite: consent of 70-243 and individual consent in School of Education; prerequisite: consent of instructor.
College of Engineering

Administrative Staff
Dean: Hunter Rossie
Assistant Dean: Donald N. Medlen
Assistant Dean: Marvin L. Butterley
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 fluids mechanics. 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 introduction to 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 each engineering stem must 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 Religion. 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 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 professional, 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-Botany 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. Laboratorys has recently been added for biometric research.
Smaller laboratories 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 con-
trol 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 fabricating.
Human factors laboratories are equipped to investigate basic
motor capabilities and the effects of selected task and environ-
mental variables. Unique equipment for the measurement of
human factors includes electronic timing, force sensing, record-
ing 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-
ern computers.

Structures 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 photelastic equipment for the accu-
rate measurement of deformations under load. The structural
laboratory also contains a pressurizing bed and frame which
permits construction of prestressed concrete structural mem-
ers. 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 Uni-
versity 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
1950 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-
ces 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
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 1951. Current
research is oriented toward problems related to environmental
pollution, bioengineering, raw hydrodynamics, and instrumen-
tation and data handling for fluids research. Student participa-
tion in all research and consulting activities characterizes the
Institute's operation.

Student Organizations and Activities

The entire College of Engineering student body is organized in
the Associated Students of Engineering.

Engineering students publish a monthly periodical, the Iowa
Tsunami.

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 Electronics 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 students who have special ability in research are eligible for election to Sigma Xi and Lambda Upsilon, honorary chemistry and chemical engineering fraternity; Chi Epsilon, honorary civil engineering fraternity; Eta Kappa Nu, honorary electrical engineering fraternity; and Pi Tau Sigma, honorary mechanical engineering fraternity, recognize the work of outstanding students 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 transcript 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-8), 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 admission to the Graduate College.

General Engineering Courses

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<tr>
<th>Title</th>
<th>Crs.</th>
<th>Hours</th>
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<td>611 Introduction to Engineering I</td>
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<td>4 a.h.</td>
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- Disciplines of creative ability to high schools of problems for which many wavers of various degrees of susceptibility may exist; application of data, written and graphical communication in presentation of problem solutions; one-half-hour seminar for those with advanced preparation in graphics.

- 613 Introduction to Engineering II | 2 | 4 a.h. |

- Preamorphosis, orthography, and nature of problems, principles of nature; studies in modeling, simulation, economics, configuration, patents, planning and human factors; introduction in use of digital computers; one-half-hour seminar for those with advanced preparation in computer use.

- 614 Engineering Drawing | 3 | 4 a.h. |

- Preadorphosis, orthography, and nature of problems, principles of nature; studies in modeling, simulation, economics, configuration, patents, planning and human factors; introduction in use of digital computers; one-half-hour seminar for those with advanced preparation in computer use.

- 618 Thermodynamics I | 4 a.h. |

- Basic concepts of thermodynamics, mechanics and some principles; thermodynamic properties of substances, Maxwell's relations, thermodynamic cycles, phase transitions and applications; prerequisite: Mathematics 232/53; concurrent: Mathematics 232/53.

- 518 Statics | 4 a.h. |

- Vector algebra, forces, couples, equivalent force-couple systems, Newton's laws, equilibrium analysis of particles and rigid bodies, applications; prerequisite: Mathematics 232/53.

- 519 Dynamics | 4 a.h. |


- 5111 Dynamics-Systems Analysis I | 4 a.h. |

- Introduction to concepts of dynamic systems techniques used for analysis of system behavior; generation and use of mechanical models to represent dynamic systems; emphasis on comparison of model and real system behavior; laboratory experiments used to complement classwork, as well as to familiarize students with experimental techniques; concurrent: Mathematics 232/53.

- 5112 Dynamics-Systems Analysis II | 4 a.h. |

- Continuation of 5111; techniques developed for systematic analysis of many complex systems consisting of interconnected primary elements; laboratory continued with increased reliance on individual judgment and initiative; prerequisite: Mathematics 232/53.

- 5132 Materials Science | 4 a.h. |

- Foundations of structure and laboratory techniques in materials science to show relationships between structures and properties of materials at atomic, micro and macro levels.

- 5119 Mechanics of Solids | 4 a.h. |

- Fundamental concepts, forces, couples, equivalent force-couple systems, Newton's laws, statics of particles and rigid bodies, equilibrium analysis of particles and rigid bodies, vectors, kinematics and dynamics; prerequisite: Mathematics 232/53.

- 5118 Mechanics of Fluids | 4 a.h. |

- Conservation of mass, forces, moments, fluid dynamics; fluid flow and the behavior of fluids; applications to real-life situations; prerequisite: Mathematics 232/53.

- 5139 Mechanics of Deformable Bodies | 4 a.h. |

- Modern theory of linearly elastic media and applications to simple conservative systems; such as bars, shafts, frames, columns and shells; prerequisite: Mathematics 232/53.

- 5121 Principles of Design I | 3 a.h. |

- Introduction to two-week projects involving optimization principles, cost analysis, and analytical and statistical analyses in design, configuration, and decision-making; prerequisite: Mathematics 232/53; concurrent: ENGRS 171/172; 170/171.

- 5115 Electric and Magnetism | 3 a.h. |

- Electricity and magnetic fields, Maxwell's equations, waves, propagation of waves, applications include radiation, guided waves, electro-thermal problems; prerequisite: Mathematics 232/53.

- 5112 Introduction to Industry | 3 a.h. |

- Introduction to communication methods within groups of people, from workgroups to large organizations, and to principles involved in effectively exchanging
Chemical Engineering

Information in industry through various channels available. Conducted as seminars, in groups, with knowledge obtained by reading, with participation in research, with application on final project. Schedules for self-designed projects. Fourth hour earned by writing well-prepared and well-presented paper or report preferably senior standing. See also Communication in Chemical Engineering.

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Practice in application of knowledge of group interaction net principles of human communication developing group about communicating in various engineering sciences for better both written and oral presentation of effective and useful derived from seminar meetings held for exchange of ideas, marketing from writing and presentation from required reading selected by each student; fourth hour earned by writing well-prepared and well-presented paper or report. Must be satisfied with advice work, typewritten 3 pages of instruction.

51:105 Technology and Society 5 S.H.

For liberal arts and engineering students, to maximize awareness of relation between technology and human environment, to develop knowledge for understanding projected consequences of technological innovation against human values. Involves study of present and future environment. Students investigate four case studies of high and possible scenarios for each environment. More study of chemical engineering, more study of chemical engineering, more study of chemical engineering.

53:105 Technology and Society 5 S.H.

Department Head: Karl Kamenmayer

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 professions, the program includes extensive training in chemistry, in addition to the basic engineering core of mathematics, engineering design, engineering sciences and humanities.

Undergraduate Curriculum

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<td>The programs leading to the M.S. and Ph.D. are more flexible than the undergraduate program. The emphasis is on research, and graduate students are employed in research and development of chemical manufacturing processes. About one-third of the program is devoted to a research project, and a thesis is required for each degree.</td>
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<tr>
<td>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...</td>
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Courses for Undergraduates

52191 52 52 54 Professional Seminar 5 or 4 s.h.
Lectures and discussions on topics of current interest in chemical engineering; required of juniors and seniors in chemical engineering; prerequisite: Junior standing.

52195 Chemical Reaction Kinetics 3 s.h.
Chemical-reaction rate theory reviewed and applied to design of reactors for chemical reactions on large scale; prerequisite: 52-340, 141, 152, Chemistry 4122.

52195 Process Calculations 3 s.h.
Application of laws of conservation of mass and energy to solution of industrial problems; rates and dimensions, energy balance, material balance; methods of numerical computation; three lectures; prerequisite: Mathematics 229M, 36.

52196 Chemical Industries 3 s.h.
Technology and economic relations of principal chemical industries; process descriptions, flow sheets, descriptions of types of instrumentation and control used in processes; two lectures; prerequisite: Chemistry 4161.

52199 Structure of Materials 2 or 3 s.h.
Principles of chemistry and physics applied in understanding of properties of materials for design and industrial applications; phase diagrams and microstructure of metals as affecting properties; polymer formulations; cements, ceramics, glasses, and composites; two lectures and two laboratory periods; prerequisite: Chemistry 4161.

52195 Design for Energy and Momentum Transfer 4 s.h.
Design of chemical processes for maximum transfer of materials or energy in chemical plant processes; flow of fluids, heat transfer, mass transfer, and chemical reactions; applications to both process and product design; prerequisite: 52-340, 141, 152.

52199 Mass-Transfer Operations 3 or 4 s.h.
Thermal design of heat exchangers; exchange of materials or energy in chemical processes; two lecture periods; two laboratory periods; prerequisite: 52-340.

52195 Heating and Cooling 3 s.h.
Laboratory study of operation of experimental heat exchangers; performance of actual chemical engineering equipment; two laboratory periods; prerequisite: 52-340.

52195 Unit-Operations Laboratory 3 s.h.
Computer simulation of chemical processes; introduction to general computer programming; use of computer to aid in the design and operation of chemical processes; prerequisite: 52-340.

52195 Chemical-Computer Laboratory 3 s.h.
Design and testing of basic chemical equipment; use of computer to aid in design and testing of chemical equipment; use of computer to aid in the design and operation of chemical processes; two laboratory periods; prerequisite: 52-340.

52196 Systems Design 3 s.h.
Introduction to the design of complex chemical processes, emphasizing the integration of chemical processes with the operation of other processes; prerequisite: 52-340, 141, 152.

52199 Process Control Theory for Design 3 s.h.
Introduction to the theory and practice of control systems for process engineering; prerequisite: 52-340, 141, 152.

52195 Pilot Plant Design 3 s.h.
Design and operation of experimental chemical processes; use of computer to aid in the design and operation of chemical processes; prerequisite: 52-340.

52195 Process Systems 3 s.h.
A brief introduction to the design and operation of complex process systems; two lecture periods; prerequisite: 52-340, 141, 152.

52199 Chemical Engineering Thermodynamics 3 s.h.
Properties of the common chemical engineering fluids and flow in chemical engineering applications; prerequisite: 52-340.

52195 Composite Materials 3 s.h.
Introduction to the design and operation of complex process systems; two lecture periods; prerequisite: 52-340.

52195 Environmental Engineering 3 s.h.
Environmental principles applied to design and operation and optimization of chemical processes and physical processes; three lecture; prerequisite: 52-340.
Civil Engineering

Department Chairman: Harrison Kaune

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

Undergraduate Program

Civil engineering is the engineering of constructed facilities: of 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 acquired through the selection of appropriate technical electives.

Undergraduate Curriculum

Freshman Year

Fall

41: Principles of Chemistry I 3
46: Elementary Chemistry Laboratory 2
8.5: Literature and Composition I-II 8
32M:35,36 Mathematics I-II 10
51L: Introduction to Engineering I-II 8
518: Statics 2

Spring

33

Sophomore Year

22M:37,38 Mathematics III-IV 6
51.6: Thermodynamics I 4
511,112: Statics Systems Analysis I-II 6
511: Materials Science 3
519: Dynamics 3
518: Mechanics of Fluids and Transfer Processes 4
5118: Mechanics of Deformable Bodies 3
5119: Sociotechnical Electives 3

Total 32

Junior Year

226:99 Probability and Statistics for Engineering and Physical Sciences 3
5121.22 Principles of Design I-II 6
53.35 Structural Analysis I 4
5341 Civil Engineering Design I 3
5361 Flow Systems in Environmental Engineering 3
5381,82 Professional Seminar 0
53161 Principles of Environmental Engineering 3
53173,174 Transportation Engineering I-II 6
51182 Sociotechnical Electives 3

Total 31

Senior Year

29.42 Physics I 3
51.25 Electromagnetic Theory 4
5383,84 Professional Seminar 0
53110 Civil Engineering Design II 3
53180 Senior Seminar 1
53184 Soil Mechanics 3
51182 Sociotechnical Electives 9
518 Technical Electives 9

Total 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 applicant 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.
Graduate Programs

The programs leading to the Master of Science and the Doctor of Philosophy are more flexible than the undergraduate program. Both thesis and comprehensive exams are available, and either may be followed by a Ph.D. program of study.

The latest information on electrical engineering, has a wide application and this has resulted in interdisciplinary research in 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 those students during the summer and through the independent study sessions.

Admission Requirements

The minimum 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. Excluding 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 55:413 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, micro 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 360/67.

Staff: professors Epley, Levy; professors eomer Kurz, Manzer, Ware, associate professors Attoh, Chiang, Hauko, Levy, Loh, Longman, Mallik, Robinson, Reddy

Courses Primarily for Undergraduates

55:15 Logic and Digital Systems

- Introduction to the fundamentals of digital logic and circuit design
- Logic and digital systems: digital logic, introduction to digital computer hardware

55:23 Electrical Circuits I

- Physical circuits of solid-state electronic devices
- Transistor operation, including semiconductor devices

55:24 Electrical Circuits II

- Active circuit design
- Circuit applications

55:32 Electromagnetic Theory

- Time domain analysis
- Wave propagation

55:37 Control and Communication I

- Control theory
- Analysis of control systems

55:38 Control and Communication II

- Control systems

55:45 Introduction to Computer Engineering

- Introduction to computer-aided design

55:49 Digital Electronics and Devices

- Operation of digital systems
- Digital systems

55:51 Principles of E.E. Design I

- Course work

55:52 Introduction to Electrical-Engineering Analysis

- Experiments

55:53 Principles of E.E. Design II

- Course work

55:54 Principles of E.E. Design III

- Course work

55:55 Professional Seminars

- Professional seminars

55:62 Topics in Electrical Engineering

- Special topics
Courses for Undergraduates and Graduates I

05:125 Principles of Communication Engineering I 3 s.h.

05:126 Linear Systems Analysis I 3 s.h.

05:130 Topics in Electrical Engineering 1 to 3 s.h.

05:140 Control Systems Analysis 3 s.h.

05:141 Electromagnetic Theory 3 s.h.

05:142 Electromagnetic Theory 3 s.h.

05:143 Electromagnetic Theory 3 s.h.

05:144 Electromagnetic Theory 3 s.h.

05:145 Electromagnetic Theory 3 s.h.

05:146 Electromagnetic Theory 3 s.h.

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05:149 Electromagnetic Theory 3 s.h.

05:150 Introduction to Statistical-Communication Theory 3 s.h.

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05:258 Introduction to Statistical-Communication Theory 3 s.h.

05:259 Introduction to Statistical-Communication Theory 3 s.h.

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05:281 Introduction to Statistical-Communication Theory 3 s.h.

05:282 Introduction to Statistical-Communication Theory 3 s.h.

05:283 Introduction to Statistical-Communication Theory 3 s.h.

05:284 Introduction to Statistical-Communication Theory 3 s.h.

05:285 Introduction to Statistical-Communication Theory 3 s.h.

05:286 Introduction to Statistical-Communication Theory 3 s.h.
signs 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>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principles of Chemistry I</td>
<td>4</td>
<td>4:1</td>
</tr>
<tr>
<td>Elementary Chemistry Laboratory</td>
<td>4</td>
<td>4:6</td>
</tr>
<tr>
<td>Literature and Composition I-II</td>
<td>4</td>
<td>5:4-6</td>
</tr>
<tr>
<td>Introduction to Engineering I-II</td>
<td>4</td>
<td>22M:35-36</td>
</tr>
<tr>
<td>51:1-2</td>
<td>8</td>
<td>51:1-2</td>
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</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics III-IV</td>
<td>3</td>
<td>51:11-12</td>
</tr>
<tr>
<td>Dynamic Systems Analysis I-II</td>
<td>3</td>
<td>51:15</td>
</tr>
<tr>
<td>Mechanics of Solids</td>
<td>3</td>
<td>51:17</td>
</tr>
<tr>
<td>Materials Processing I</td>
<td>3</td>
<td>56:24</td>
</tr>
<tr>
<td>Engineering Management Science</td>
<td>3</td>
<td>56:107</td>
</tr>
<tr>
<td>Materials Science II</td>
<td>3</td>
<td>56:128</td>
</tr>
<tr>
<td>Sociohumanistic electives</td>
<td>3</td>
<td>56:128</td>
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</table>

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Probability and Statistics</td>
<td>3</td>
<td>22S:25</td>
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<tr>
<td>for Engineering and Physical Sciences</td>
<td>3</td>
<td></td>
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<tr>
<td>Physics I</td>
<td>3</td>
<td>29:82</td>
</tr>
<tr>
<td>Thermodynamics I</td>
<td>3</td>
<td>51:6</td>
</tr>
<tr>
<td>Principles of Design I-II</td>
<td>3</td>
<td>51:21-22</td>
</tr>
<tr>
<td>Electromagnetic Theory</td>
<td>4</td>
<td>51:25</td>
</tr>
<tr>
<td>Engineering Statistics</td>
<td>4</td>
<td>56:132</td>
</tr>
<tr>
<td>Technical elective</td>
<td>3</td>
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<tr>
<td>Sociohumanistic electives</td>
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Senior Year

<table>
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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Professional Seminar</td>
<td>1</td>
<td>56:141</td>
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<tr>
<td>Introduction to Operations Research</td>
<td>4</td>
<td>56:144</td>
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<td>Information Systems Design</td>
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<td>Design of Methods and Measurement Systems</td>
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<tr>
<td>Materials elective</td>
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<td>Technical elective</td>
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<tr>
<td>Science-care elective</td>
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Total—128

Industrial and Management Engineering

Department: Industrial and Management Engineering

Undergraduate Program

The general nature of industrial engineering's 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 sub-systems. In arriving today and tomorrow for the conservation and improvement of this world’s environment, the importance of such optimal systems design can be readily overemphasized. The abilities of the industrial engineer provide, therefore, unique capability for significant contributions 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

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<td>Science-care elective</td>
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Total—128
Strongly recommended co/bi/biologica electives include:

31:1 Elementary Psychology
31:155 Human Engineering
31:156 Psychology in Management
31:157 Social/Cap Orientation
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 of 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 of 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 tuition 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 from accredited baccalaureate curricula in any engineering 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. 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 advisor and is approved by the degree committee.

Entering students will find some background in computer programming, probability and statistics, engineering economics, human factors, and systems analysis helpful preparation. Compensating coursework may be required for students with nonengineering backgrounds. 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 or a minimum of 30 semester hours of graduate work.

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 achievement. 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 preparation 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 sanitation 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 science, 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, Leona, Litzscher, Simon; associate professors Bedlow, Boenacker, Mohrlen, Ramberg; assistant professor Haffey

Courses Primarily for Undergraduates

5984 Materials Processing I 3 or 4 s.h.
5985 Materials Processing II 3 or 4 s.h.
5989 Professional Seminar 1 or 2 s.h.
5992 Professional Seminar 1 s.h.
5993 Professional Seminar 2 s.h.
5994 Professional Seminar 3 s.h.
5995 Professional Seminar 4 s.h.
5996 Professional Seminar 5 s.h.
5997 Professional Seminar 6 s.h.
5998 Professional Seminar 7 s.h.
5999 Professional Seminar 8 s.h.

Graduate students, students enrolled in the Quad Cities Graduate Study Center, and those employed by a company may be registered for these courses.
Mechanical Engineering

Department Chairmen: Robert G. Haring
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 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

Freshman Year x.a.
41 Principles of Chemistry I 3 0 3
46 Elementary Chemistry Lab 0 2 2
85-6 Literature and Composition I-II 4 4 8
22M1534 Mathematics I-II 5 8 10
511-2 Introduction to Engineering I-II 4 4 8
518 Statics 0 2 2

16 17 33

Sophomore Year

22M1738 Matematics III-IV 3 3 6
511-11 Dynamics Systems Analysis I-II 3 3 6
515 Materials Science 0 3 3
518 Dynamics 3 3 6
5118 Mechanics of Fields and Transfer Process 0 4 4
5119 Mechanics of Deformable Bodies I 3 3 6
516 Thermodynamics I 4 0 4
316 Sochonomic Electives 3 0 3

16 16 32
Mechanical Engineering

Junior Year

225.39 Probability and Statistics for Engineering and Physical Sciences 3 3
29.82 Physics I 3 3
51.21–22 Principles of Design I–II 3 3
51.25 Electromagnetic Theory 4 4
58.52 Experimental Engineering 4 4
58.62 Thermodynamics I 3 3
Sociocultural Electives 3 3
Technical Elective 3 3
Total 15 32

Senior Year

29.83 Physics II 3 3
58.75–76 Mechanical Engineering Design I–II 3 6
Sociocultural Electives 3 6
Technical Electives 6 7 13
Total 16 31
Total 128

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’s 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 advisement and through a review by the examining committee. As soon as possible after admission, each student should select a Department faculty member who may agree to work with him or her. The advisor will continue to serve as advisor until the program is completed. 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, excluding 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 adviser.

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 3-year 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 theses.

Staff

Professors Anderson, Hori, Luce, Madsen, Stephens, Trumpler; Associate Professors Chou, Scholz, Spencer; Assistant Professor Smith

Courses Primarily for Undergraduates

58.14 Dynamic Systems for Transfer Students 3 s.h.
58.18 Statics and Kinetics 3 s.h.
58.39 Dynamics 4 s.h.
58.41 Thermodynamics I 3 s.h.
58.42 Thermodynamics II 3 s.h.
58.43 Fluid Mechanics 3 s.h.
58.44 Strength of Materials 3 s.h.
58.45 Engineering Economy 3 s.h.
58.46 Design of Experiments 3 s.h.
58.47 Fluid Mechanics—Design I 3 s.h.
58.48 Fluid Mechanics—Design II 3 s.h.
58.51 Heat Transfer 3 s.h.
58.52 Experimental Engineering 4 s.h.
58.53 Material Science and Engineering 3 s.h.
58.54 Manufacturing Processes 3 s.h.
58.55 Manufacturing Processes II 3 s.h.
58.56 Manufacturing Processes III 3 s.h.
58.57 Manufacturing Processes IV 3 s.h.
58.60 Solid Mechanics 3 s.h.
58.61 Fluid Mechanics 3 s.h.
58.62 Heat Transfer 3 s.h.
58.63 Vibration Mechanics 3 s.h.
58.64 Vibration Mechanics II 3 s.h.
58.65 Vibration Mechanics III 3 s.h.
58.66 Vibration Mechanics IV 3 s.h.
58.67 Vibration Mechanics V 3 s.h.
58.68 Vibration Mechanics VI 3 s.h.
58.69 Vibration Mechanics VII 3 s.h.
58.70 Vibration Mechanics VIII 3 s.h.
58.71 Vibration Mechanics IX 3 s.h.
58.72 Vibration Mechanics X 3 s.h.
58.73 Vibration Mechanics XI 3 s.h.
58.74 Vibration Mechanics XII 3 s.h.
58.75 Vibration Mechanics XIII 3 s.h.
58.76 Vibration Mechanics XIV 3 s.h.
58.77 Vibration Mechanics XV 3 s.h.
58.78 Vibration Mechanics XVI 3 s.h.
58.79 Vibration Mechanics XVII 3 s.h.
58.80 Vibration Mechanics XVIII 3 s.h.
58.81 Vibration Mechanics XIX 3 s.h.
58.82 Vibration Mechanics XX 3 s.h.
58.83 Vibration Mechanics XXI 3 s.h.
58.84 Vibration Mechanics XXII 3 s.h.
58.85 Vibration Mechanics XXIII 3 s.h.
58.86 Vibration Mechanics XXIV 3 s.h.
58.87 Vibration Mechanics XXV 3 s.h.
58.88 Vibration Mechanics XXVI 3 s.h.
58.89 Vibration Mechanics XXVII 3 s.h.
58.90 Vibration Mechanics XXVIII 3 s.h.
58.91 Vibration Mechanics XXIX 3 s.h.
58.92 Vibration Mechanics XXX 3 s.h.
58.93 Vibration Mechanics XXXI 3 s.h.
58.94 Vibration Mechanics XXXII 3 s.h.
58.95 Vibration Mechanics XXXIII 3 s.h.
58.96 Vibration Mechanics XXXIV 3 s.h.
58.97 Vibration Mechanics XXXV 3 s.h.
58.98 Vibration Mechanics XXXVI 3 s.h.
58.99 Vibration Mechanics XXXVII 3 s.h.
60.01 Introduction to Mechanical Engineering 3 s.h.
60.02 Introduction to Mechanical Engineering II 3 s.h.
60.03 Introduction to Mechanical Engineering III 3 s.h.
60.04 Introduction to Mechanical Engineering IV 3 s.h.
60.05 Introduction to Mechanical Engineering V 3 s.h.
60.06 Introduction to Mechanical Engineering VI 3 s.h.
60.07 Introduction to Mechanical Engineering VII 3 s.h.
60.08 Introduction to Mechanical Engineering VIII 3 s.h.
60.09 Introduction to Mechanical Engineering IX 3 s.h.
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60.11 Introduction to Mechanical Engineering XI 3 s.h.
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60.38 Introduction to Mechanical Engineering XXXVIII 3 s.h.
60.39 Introduction to Mechanical Engineering XXXIX 3 s.h.
60.40 Introduction to Mechanical Engineering XXXXI 3 s.h.
60.41 Introduction to Mechanical Engineering XXXII 3 s.h.
Mechanics and Hydraulics

68232 Radiative Heat Transfer 3 s.h.
Thermal radiation properties, radiation-interchange among surfaces separated by radiatively nonparticipating media, radiative energy transfer through absorbing, emitting, scattering media.

68235 Dynamics of Nonhydrostatic Flows 3 s.h.
Effect of internal turbulence, dissipation and reneuumisation, initiation, phase transformation on fluid flow, solid-elastic medium, shock waves, sound flow, slender body theory, singular perturbation techniques, applications of boundary theory and concordance phenomena; porous medium concept of instructor.

68239 Compressible Flows 3 s.h.
Continuums of 51,32; physical characteristics of real gases, hyperbolic flow, including approximation methods in high speed flow theory, real gas, viscous and radiation effects, nonconcordance compressible phenomena.

68250 Advanced Engineering Analysis 2 to 4 s.h.
Advanced analytical topics with applications in fluid dynamics, vibrations, heat transfer, etc.

68255 Sample Data Control Systems 3 s.h.
Unified treatment of digital and analog data control systems with emphasis on design and synthesis, with use in Electrical Engineering 53,000, prerequisite 58,150.

68261 Nonlinear Control Systems 3 s.h.
Theoretical and practical concepts useful in areas of nonlinear control problems, course Electrical Engineering 53,042, prerequisite 58,150.

68277 Optimal Control Systems 3 s.h.
Steepest as Electrical Engineering 55,263; prerequisite 58,150.

68282 Electric Control Systems 3 s.h.
Probability theory and random variables, including probability axioms, jointly distributed random variables, and conditional probability and expectations; stochastic processes, including random differential equations, normal, Markov and other processes; optimal estimation; theory; smoothing, filtering, prediction; stochastic optimal control theory; same as Electrical Engineering 55,263; prerequisite consent of instructor.

68293 Automatic Control Systems 3 s.h.
Advanced discussions on recent advances in control systems analysis and synthesis, prerequisite consent of instructor.

68295 Research: Mechanical Engineering 4 s.t., 6 s.h.
Research for fulfillment of advanced degree requirements; prerequisite consent of Department chairman and faculty advisor.

Mechanics and Hydraulics

Acting Department Chairmen: Kwan Rim
Degree offered: M.S., Ph.D.

There are several areas of specialization possible in the Department. The programs accommodate those who are primarily interested in solid mechanics, fluid mechanics and hydraulic engineering, or a combination of them. A program in water resources development combines work in hydraulic engineering and sanitary engineering and is based on courses in the Mechanics and Hydraulics Department and the Civil Engineering Department.

The Department of Mechanics and Hydraulics also cooperates in interdisciplinary doctoral programs with the Program in Applied Mathematical Sciences (see "Graduate Colloquium").

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 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 application, equipment for electronic observation, and photographic equipment, in addition to the usual testing machines.

Admission Requirements

Graduate students are expected to have an undergraduate major in mechanical or civil engineering. Those with majors in mathematics or physics must take some undergraduate work in the College of Engineering concurrently with their graduate program.

An applicant for the master's degree program is expected to have graduated in the upper quarter of his or her undergraduate class and to have a grade-point average above 3.0. Usually 3.0 is expected. Ph.D. candidates should have had a 3.50 grade-point average in their master's degree program. Applicants must meet the general admission requirements of the Graduate College (see "Graduate College").

Master of Science

The master's degree can be secured by earning 30 semester hours of credit in an approved course of study. Approximately half of these hours are required and the other half selected by the student with the approval of his or her advisor. The M.S. thesis is optional, but when chosen it usually requires about six semester hours of credit. Candidates for the degree are expected to have a minimum grade point near 3.00 and to pass written and oral examinations.

Doctor of Philosophy

Doctoral candidates are expected to maintain a 3.5 grade-point average throughout the doctoral program. Approximately 60 semester hours beyond the master's are to be earned. About 25 semester hours are devoted to the dissertation and 15 or more semester hours to mathematics or other closely related areas, leaving approximately 20 semester hours of major courses to be taken in the Department.

Choice of major subjects is based on the particular line of interest the student wishes to follow. Normally, the coursework is in the same area as the dissertation.

All Ph.D. candidates are required to have one year of foreign language study for their cultural value. Ability to pass the examinations for the first year of a language is accepted in lieu of actual examination. Furthermore, students from non-English-speaking countries are allowed to use English as their foreign language and to take a year or at least six hours of English at the appropriate level.

A thesis supervisor is appointed for each graduate student, with considerable attention to the student's wishes. Under Graduate College rule, the comprehensive examination must be taken by the next to the last academic period and the final examination, entirely on the dissertation, culminates the program.

Financial Aid

There is a considerable amount of support available for graduate students. In addition to federal traineeships, NSPE, graduate research assistantships are available from the Graduate College upon recommendation from the Department, and a significant volume of contract work relies on enlisting a number of graduate students as research assistants.
Graduate College

Administrative Staff

Dean: Duane C. Sprinkelbach
Dean for Advanced Studies: Aviva H. Staff
Associate Deans: James F. Jakubusz, Charles M. Mason
Graduate Committee: Sally L. Roger

Members of the Graduate Council: William P. Kline (Mechanics and Hydraulics); Erle E. Bergsten (Law); Thomas M. Connay (Biochemistry); Lloyd J. Filer (Pedestrians); Robert N. Henry (Education); Frank J. Koele (Mathematics); James F. McCue (Agriculture); William R. Savage (Physics); Walter J. Tomasz (Art); Donald P. Resheter (Graduate Student Senate); Perdita 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 assistant, associate and full professors. 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 degrees.  

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.
Biology—M.E., Ph.D.
Biostatistics—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—Language and Civilization—M.A.
Civil Engineering—M.S., Ph.D.
Classics—M.A., Ph.D.
Comparative Law—M.C.L.
Comparative Literature—M.A., Ph.D.
Computer Science—M.S., Ph.D.
Crown and Bridge Prosthodontics—M.S.
Cultural Anthropology and Linguistics—Ph.D.
Dental Hygiene—M.S.
Dental Prosthodontics—M.S.
Dentistry—M.A., M.P.A., Ph.D.
Development—M.A., M.F.A., Ph.D.
Economics—M.A., M.T., Ed.S., Ph.D.
Electrical Engineering—M.S., Ph.D.
Education—M.A., M.P.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., M.L.S.
Linguistics—M.A.
Museum Studies—M.A.
Mathematics—M.S., Ph.D.
Graduate College

Mechanical Engineering—M.S., Ph.D.
Mechanics and Hydraulics—M.S., Ph.D.
Microbiology—M.S., Ph.D.
Molecul—M.A., Ph.D.
Nuclear Science and Technology—M.S.
Nutrition—M.S., Ph.D.
Nutrition—M.S., Ph.D.
Oceania and Australia—M.S.
Operative Dentistry and Endodontics—M.S.
Ophthalmology—M.S.
Oncology—M.S.
Orthopedics—M.S.
Orthopedic Surgery—M.S.
Perinatology—M.S.
Pathology—M.S.
Peptidology—M.S.
Periodontology—M.S., Ph.D.
Pharmacology—M.S., Ph.D.
Pharmacology—M.D., Ph.D.
Physical Education for Men—M.A., Ph.D.
Physical Education for Women—M.A., Ph.D.
Physical Therapy—M.A.
Physiology—M.S., Ph.D.
Physiology and Biochemistry—M.S., Ph.D.
Political Science—M.A., Ph.D.
Preventive Medicine and Environmental Health—M.S., Ph.D.
Psychology—M.A.
Psychology—M.S.
Radiation Biology—M.S., Ph.D.
Radiation Safety—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.
Sociology—M.A., Ph.D.
Speech Pathology and Audiology—M.A., Ph.D.
Statistics—M.S., Ph.D.
Statistics—M.S., Ph.D.
Statistics—M.S., Ph.D.
Urban and Regional Planning—M.A., M.S.
Urban Planning—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 interlocking relationship with the Graduate College. For further information 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 Appointments" 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 doctoral programs; typical stipends of $4,000 a year on a year-around 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 for four and all summer, recipients have full 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 $3,400–2,800, 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-T. Fellowships, College-Teacher Program

Designed to prepare college or community-college instructors; provides 12-month stipend of $2,400 for the first year and $2,800 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 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.

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 affecting 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 I. Admission to 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 admission 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 transcript of each undergraduate and graduate institution attended must be submitted 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 Graduate Record Examination (GRE) or, for applicants to graduate programs in business administration, the Graduate Management Admission Test for Business (GMAT). Applicants for whom admission data are complete, with the exception of scores on the GRE or the GMAT, may be admitted if they meet all other requirements. The GRE, or the GMAT, must be taken within one semester after registration. The test is given several times a year at test centers established 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 admission of a student is left to the departments. Some departments in fields where GRE Advanced Tests are available require these in addition to the Aptitude Test. Inquiries about the Aptitude Test may be directed to University Evaluation and Examination Service, and inquiries about the requirement 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 Quebec), Australia, or New Zealand. The examination is given at various times of the year in many centers throughout the world. Inquiries should be addressed to the Director, TOEFL, Educational Testing Service, Princeton, New Jersey 08540.

Foreign students transferring from unfinished degree programs 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 consideration for admission.

The Graduate College will advise the departments of those students barely 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 foreign 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 University 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 professional 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 categories:

1. Regular—Students who have met the minimum requirements for admission and who have been accepted by a department, 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 toward 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 recommended 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 H” 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.

H. 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 only 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.

Departments, 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 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.
(Fellows 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 per 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 advisor and the approval
of the dean of the Graduate College.

D. Reduced Schedules for Teaching and Research Assistants and
Others

1. One-half-time appointees may register for no 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 no more than
10 semester hours during a semester or five semester hours
during the eight-week summer session.

3. Two-thirds- and three-quarter-time appointees may register
for no 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 no more than
seven semester hours during a semester or four semester
hours during the eight-week summer session.

In addition to half-time, full-time, or regular teaching and
Research assistants, or other assistance, an instructor, may register
for no 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
associate 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 no more than one semester hour of
credit for each of the remaining weeks of classes (not including
the examination period) in the term. The 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 instructor 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 Institutional Cooperation; (see "Section III");
2. Research at approved locations under the direction of members of the graduate faculty at The University of Iowa;
3. Field work as part of a regularly scheduled course or research 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' University (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 residence credit must apply for admission to regular status (see "Section 1, 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 student'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 department 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 graduate 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 registered.

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 Student 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 reregister.

Section III. Traveling Scholar Program

A. Purpose
The program under the auspices of the Committee on Institutional Cooperation representing 11 universities in the Midwest will enable a graduate student to take advantage of special resources 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 appropriate faculty member at the possible host institution in regard to a visiting appointment.
2. After agreement by the student's adviser and the faculty member at the host institution, graduate dean at both institutions 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, he 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 be dropped from the program without 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, departmental regulations shall establish higher requirements, which then determine the individual student's standing with regard to probation and dismissal. Whenever departments raise standards, the new regulations will apply only to new students and not retroactively to the disadvantage of those already in the degree program. Departments must notify the student, the Graduate dean, and the Registrar of actions affecting a student's standing.

D. Restriction on Students on Probation
A student on probation shall not be permitted to take comprehensive 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 student'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 these 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' University may be counted as residence credit in this institution, provided such work is acceptable by the student's major department on the basis of the department's determination of its applicability toward the degree. (See Sections X. D and XII. C for minimum 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 research 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 Proportional 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 periods: (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 to be 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 registrations 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 reappraisal: 1 grade to the Registrar will be set by the Graduate dean for each session and printed in the academic calendar. Courses may not be reappraised to remove incomplete; 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. Interdepartmental degree program provided that the instructor of the course and the student's departmental advisor 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 of 700 or an ATGITS 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 sought 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 assistantships are appointed by the Graduate College and 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 forms 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, scholarly-aspiring 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

Scholarships, fellowships 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 in those departments in which the student is registered. No student may be a student of two departments and/or study simultaneously. In 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.
F. Dismissal of Assistants
A uniform policy defining procedures to be followed in the dismissal of assistants has been approved by the Board of Regents. Copies of this policy are available in the Office of the Graduate Dean.

G. Research Associateships and Postdoctoral Fellowships
These provide for independent research. Appointment is made by the Graduate dean upon recommendation of the department.

H. Credit
No academic credit is allowed for the teaching or research service for which the student receives payment as a graduate or a faculty research assistant.

I. Loans
Graduate students requiring financial assistance may apply for loans at the Office of Student Finance. See "Scholarships and Loans" section of the Catalog.

I. Other Forms of Support
Many departments offer financial assistance in the form of trainships, part-time employment on research programs or part-time teaching. Requirements should be addressed directly 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 advisor. Failure to file the application by that date will result in postponement of graduation to a subsequent convocation.

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 practice in the various departments. For doctoral candidates who have completed all work except the final examination, the postcomprehensive registration described in "Section XIII. J. 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 advisor and the departmental executive with the Graduate College within the session 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 II. 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 work 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 for this purpose 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 advisor and the major department. Work completed while registered for a professional degree in the colleges of Law, Medicine or Dentistry will be counted as part of the residence requirement for nonprofessional 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 toward the minimum course require-
ment. The thesis may be a scholarly study or an artistic
production.

One copy of the thesis, in typewritten 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 10 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 AI. Two-Year Degrees

A. Master of Fine Arts Degree
This degree is awarded for creative work in the visual arts,
dramatic art, 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-
imum combined total of 60 semester hours of graduate credit.

For other requirements see "Section X. B. Plan of Study"; "C. Major and Related Fields"; "E. Reduction of Old Credits"; "H.
Master's Degree with Thesis"; "I. 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
government service, school teaching, administration, administra-
tion, supervision and special services.
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 period may be declined by the major depart-
ment 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 XI. B. Plan of Study"); "C. Major
and Related Fields"; "F. Limit on Law, Medical or Dental
Courses"; "I. 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 practice 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 Old Credits"; "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 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 certified by the department as contributing to the student's doctoral program. For purposes of record and computation 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, will 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 Old Credits
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 applied 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 colleges 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 degrees. 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. Requirements in Foreign Languages
There is no Graduate College-wide requirement in foreign languages. Those departments which do require competence 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. Departments' 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-
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 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 "satisfactory 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 be specific in defining the area, in requiring 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 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 may, upon the permission of the department, present himself or herself for examination not sooner than four months after the first examination. The examination may be repeated only once, at the option of the department.

J. 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 meet 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, be or she may not be readmitted to candidacy until be 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 convocation 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 perma aerobic 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 purpose, 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 nor until the first check of the dissertation by the Graduate College; however, a student must take the final examination no 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 office not later than 46 hours after the date of the examination. The final examination will be evaluated as satisfactory or unsatis-
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.
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 the Section 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 abilities and place the legal process in its social context. All first-year students are introduced to legal research 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 established 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 twenty-hour requirements for both degrees. In addition to reducing the time required to obtain both degrees, it is hoped the student 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 use 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 comment, criticism, satire, expression of student 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-
dents may earn academic credit for some of these activities. Cooperating agencies include the Hawkeye Legal Services Society of Iowa City, the Cedar Rapids Legal Aid Society; students are also involved in business corpus and civic projects as the Men's Refundary in Amana, a habes corpus project at Fort Madison State Penitentiary, an Iowa Civil Liberties Union referral project, or programs in several county prosecutor's offices and in the office of the United States Attorney, a program with the Iowa state police, and a law office which the College of Law has established in a disadvantaged area of Davenport, Iowa.

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 Delta Pi, 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 100,000 bound volumes, the law library is 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 reputed. 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 $500 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 Catalogue, the College offers research assistantships. However, students should consult with the Financial Aid Office for specific requirements. Students are awarded to high-ranking third-year students who have demonstrated ability for research and scholarship. About one-third of the student body has scholarship assistantships.

Placement
A wide variety of placement opportunities are 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 firm in the large urban areas of our country and in small firms throughout the country. There are many low 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

Preliminary Studies
No prescribed 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 intellectual interests. However, the objectives of this 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 application is responsible for seeing to it that the final dates for submitting applications, each college or university he or she attended, has listed an official transcript to the University, or, if the student has registered with it, in or to the school. He or she should request information forwarded from the Law School Data Assembly Service, Princeton, New Jersey.

An application fee of $10.00 must accompany applications 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 or prior to commencing work in the College of Law.

To be considered for admission, the applicant should have 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 the score forwarded to the College of Law. Except upon showing an acceptable to it, the admission committee will not consider applications from students who fail to pass the test by April of the year they intend to enroll.

Fulfillment of the specific requirements for admission listed above does not ensure admission to the College of Law. From the applicants meeting the minimum requirements, the admission's committee will select those who appear to be best qualified for the study and practice of law. The admission 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 Association of 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 requirements for entering students at this school and has done substantially above-average work in the law school to which he or she is transferred. 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. Applicants are required to make an advance non-refundable deposit of $500.00 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 $500.00 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 readmitted upon timely application at the conclusion of his service. Applicants who are accepted and who are now to The University 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 academic 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 than 26 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 purposes of comparison as follows: 100-83 = A 79-72 = B 69-65 = C 59-50 = F 84-80 = A+ 73-78 = B+ 64-60 = D+ 89-93 = A 71-75 = B 66-64 = C+ 94-99 = A++ 70-70 = B+ 65-65 = C 90-93 = A+ 69-69 = C 91-99 = A 68-68 = C+ 92-99 = A—. 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 reclassified on probation 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.


Clearing House

1891-96 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; complaints; answer and reply; motion for judgment on pleadings and summary judgment; modern rules pleading and contain evidence to present-day practitioners; society’s viewpoint on order of civil litigation process as to individual rights as protected and justice as efficiently achieved by the judge

1891-98 Civil Procedure II 3 s.h.

Decisions applicable to modern rules practice, including motions for new trial, rules of evidence, procedures of pleading, conditions and issues of estoppel; rules of evidence; rules of procedure: scope of common law; scope of modern practice, including problems of pleading and motion practice; proper and compulsory joinder; cross-claims and third-party claims; arbitration, compulsory and class actions; concept of real party in interest and res judicata

1891-97 Criminal Law 3 s.h.

Process and institutions designed to resolve disputes, regulate conduct, adjudicate, write the law, and pass judgments; major statutes that regulate conduct; course has examined statutes that regulate conduct; law that has been made to control conduct; attempt to detect the consequences of the law in that conduct; attempt to detect the consequences of the law in that conduct

1891-99 Constitutional Law I 3 s.h.

Alliance of governmental powers according to nation's Constitution; judicial function in constitutional law; political philosophy of various branches of constitutional government; federal system; political power delegated to national government; powers reserved to states; rule of judicial power in structuring limits within which society operates; institutional development of legal system and relationships among institutions within system

1891-107 Criminal Procedure 3 s.h.

Purposes, development, scope of judicial remedy; aspects of procedural aspects of remedies; agreements as modified by legislative intent; consistency, their performance, constructive and interrelating, their role in the future. Principles of procedures, the rules which govern the use of evidence in federal courts. The crime of extortion, use of evidence, the protection of the accused

1891-108 Prison and Subversive Transmissions 3 s.h.

Prisons, development, scope of judicial remedy; aspects of procedural aspects of remedies; agreements as modified; legislative intent; consistency, their performance, constructive and interrelating, their role in the future. Principles of procedures, the rules which govern the use of evidence in federal courts. The crime of extortion, use of evidence, the protection of the accused

1891-110 Criminal Law II 3 s.h.

Purposes, development, scope of judicial remedy; aspects of procedural aspects of remedies; agreements as modified; legislative intent; consistency, their performance, constructive and interrelating, their role in the future. Principles of procedures, the rules which govern the use of evidence in federal courts. The crime of extortion, use of evidence, the protection of the accused

1891-119 Civil Procedure 3 s.h.

Principles of decision behavior designed as deterrents or dangers to society as to be characterized as criminal, what actions should be considered and what, what steps can be taken to deal most effectively with behaviors deemed criminal, role of law in directing such behaviors. Substantive law of substantive law and criminal law. Impoundment and integration of social science and law to examine society's major legal system

1891-120 International Law 3 s.h.

Past, present, and future role of law in serving global public order among most important aspects of practitioners engaged in wide variety of purposes across national and international governmental, educational, and institutional backgrounds. The role of law in ensuring rights and responsibilities of individuals in legal systems

1891-121 Property 3 s.h.

Concepts and problems as one of basic foundations of law; acquisition of property; principles of duty and limitations on use and disposition, in conjunction with traditional common law methods of doing so. Principles of possession and of public interest in ownership, especially need for stability and authority in property relationships, historical development of the law.
9136 Resource Planning 3 a h. Problems and processes associated with allocation and regulation of land and water resources, including pricing and other land use controls, rural land management programs, environmental quality controls, restrictions on use of nonrenewable and other nonrenewable resources, and methods of allowing one or more uses to coexist sustainably to ordinary forms of ownership; relationship between law and other disciplines, administrative aspects of resource management, planning, use of law to address differential social needs.

9139 Administrative Law 4 h. Formal and informal procedures, processes and functions of state and federal administrative agencies, including litigation, executive and judicial administration of administrative activity.

9108 Agricultural Law 6 h. Use of law and legal institutions for dealing with social, economic, political and religious problems in relation to which specific laws, or common law, conflict with individual rights; economic and social policies in society; methods of resolving and preventing conflicts with general labor; social policies affecting the quality of life in the United States; and the relationship of law to other social and political institutions.

9111 Animal Husbandry Law 6 h. Legal and economic aspects of governmental regulation of business conduct and creation and enforcement of private rights under federal laws. Sherman, Clayton, Robinson-Patman and Federal Trade Commission Acts and related legislatures; exhibitors' responsibilities, regulations, required marks; price maintenance; price discrimination and price agreements and other enforcement techniques.

9112 Antitrust Law 6 h. Legal and economic aspects of governmental regulation of business conduct and creation and enforcement of private rights under federal laws. Sherman, Clayton, Robinson-Patman and Federal Trade Commission Acts and related legislatures; exhibitors' responsibilities, regulations, required marks; price maintenance; price discrimination and price agreements and other enforcement techniques.

9113 Antitrust Advocacy 1 1. Antitrust institutions and developments in antitrust law and legal reform through participation in court-case competition; two rounds of competitive times in each semester; the wheel involving all competes round on Federal Rules of Antitrust Procedure; open to second-year students only.

9115 Antitrust Advocacy 2 1. Antitrust Competition of advocacy Advocacy 1, two rounds of competition, with examination rounds, scored oral round before Iowa Supreme Court on Supreme Court Day; models on Iowa Rules of Civil Procedure; open to second-year Iowa students only.

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51683 Poverty and the Law Seminar
CR. 3cr.
Urban environment control, coverage of democracy in planning process, housing program designed to meet need of ghetto

51684 Student Rights Seminar
CR. 3cr.
Selected legal problems arising within contemporary university, emphasis on student rights, including such topics as academic due process and free speech

51698 Taxation: Corporate Reorganization Seminar
CR. 3cr.
Learn the consequences which flow from various kinds of corporate adjustments, including statutory mergers, asset acquisitions and stock acquisitions; prerequisite: 91272 or 91279 Federal Taxation
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.

Because 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 nonmedical students enroll each semester in basic sciences 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 whatever facet of medical education best relates to his or her professional interests.

Combined M.D.-Graduate Programs

Students who want to pursue the M.D. degree in combination with an M.A., M.S. or Ph.D. program may do so by gaining admission both to the College of Medicine and to 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, orthopaedic 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 Among Men in Medicine or American Men of Science.

Facilities

The College of Medicine is housed in the UI of 1 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, pediatrics, ophthalmology, rehabilitation and a rehabilitation center; and the University's physical therapy training unit. It has a 162-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 9,000 outpatients are seen. The electroencephalographic laboratories serve the entire Health Center.

Hospital School

The Hospital School for Severely Handicapped Children provides educational opportunities for 65 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 edu-
cational psychology, social work, nursing and therapy in activities concentrating on patient care with research and professional train-
ing.

The Oakdale Campus
The 525-acre Oakdale campus is located seven miles northwest of the Health Center. Its 187-bed hospital houses the state tuber-
culosir treatment center, an alcoholics treatment unit, medical technology training laboratories and classrooms, and toxicology laboratories. Also on the Oakdale 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 commu-

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 engage 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 metabolic and gastrointestinal diseases. The VA Hospital also offers unique research opportunities in the fields of clinical pharmacology, gastroenterology, cardiology, ne-

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-

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 Build-
ing, 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 appli-
cants 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 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: a complete introductory course;
- Mathematics: college algebra and trigonometry; or advanced college mathematics, if the student completed college algebra and trigonometry in high school;
- Chemistry: as a minimum, a complete introductory course in organic chemistry, which would ordinarily follow a complete introductory course in modern general chemical principles; and
- Biological science: a complete introductory course in the prin-
ciples of animal biology, or zoology and botany (but not bot-
any alone), and one additional course in biology.

To be considered for admission, an applicant must have at-

- given a grade-point average of at least 3.5 (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 pass-fail basis.
- been selected for 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 Association of American Medical Colleges. Appli-
cants are required to complete this test in May or October of the year preceeding that for which they are applying for admis-
sion. Students may make arrangements to apply for this exami-

- nated through the University's Evaluation and Examination Services.

Personal interviews will be arranged as desired by the admis-
sions 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 satisfac-
tory physical examination report to the University Stu-
dent Health Service within two weeks after notification of ac-
ceptance. Applicants must also complete, through Student Health Service, an X-ray film of the chest and successful vaccina-
tion against smallpox prior to registration.

Admission to Advanced Standing
A transfer student may be eligible for advanced standing if he or she meets the admissions requirements for students entering
at this school; has satisfactorily completed courses qualifying him or her for advanced standing; has achieved high scholastic standing; and submits a statement from the dean of the school from which he or she is transferring, showing work done at that school.

Unclassified Students
Applicants for admission to the College of Medicine who are not degree candidates but who want 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 at least for 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. Mid-year awards are made on the basis of need, although, in accord with the donor 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
39-117 Genetics for Medical Students
4.0 credits
Course course for medical students, normally taken during second semester; review of general genetics (usually independent) and protein study and classification of genes and complex inborn errors as seen in clinical medicine.

50-1198 Illustrations and Scientific Methods (Sophomore Level)
3.0 credits
Individualized, programmed review of basic histology; emphasis on practical concepts required to critically appraise medical literature; topics include descriptive statistics, probability, populations and sampling, interpretation of statistical significance tests, regression and correlation, presentation and discussion with clinical faculty cover basic principles and examples of epidemiology and clinical trials.

50-115 Neurology and Behavior
3.0 credits
Full-exposure course devoted to correlating and integrating basic science care of patients with clinical experience of junior and senior years; includes pertinent information and development of skills in history-taking, physical diagnosis, laboratory diagnosis and related material which will prepare student for related clinical experience.

50-1111 Introduction to Clinical Medicine
1.0 credits
Full-exposure course devoted to correlating and integrating basic science care of patients with clinical experience of junior and senior years; includes pertinent information and development of skills in history-taking, physical diagnosis, laboratory diagnosis and related material which will prepare student for related clinical experience.

50-1151 Designing Learning Programs for Health-Careers Education
3.0 credits
Emphasis placed on development and evaluation of educational programs, preparation of training programs and the selection of training practices, and practical application geared toward establishment of working relationships with ongoing educational programs; activities individualized to meet various backgrounds, needs and objectives, vary as Education 700-115.

50-1152 Learning Strategies for Health-Careers Education
1.0 credits
Role of health specialist as teacher examined; variety of learning strategies explored through discussions, observations, micro-experiences and experiences within actual learning environment; activities individualized to meet various backgrounds and needs, vary as Education 700-112.

50-1153 Fast-Track Learning in Health-Careers Education
3.0 credits
Role of health-care educator as leader and learning facilitator explored in detail; student experience with variety of learning strategies through readings, discussions, observations, micro-experiences and actual classroom activities; prerequisite: admission to Health-Careers Education.

50-1154 Health-Careers Education and the Health-Service Industry
3.0 credits
Comprehensive overview of health-service industry, particularly as related to both initial preparation and continuing education of health-care personnel.

Anatomy
Intern Coordinating Committees (Chairman: R. E. Heidt)
Degrees offered: PHD (M.D. only) to study with primary orientation in one of health sciences.

The Ph.D. in anatomy is an opportunity for original work done in experimental biology, usually with emphasis on structure-function relationships and often with a more immediate application 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 courses listed under such titles as "Advanced Human Anatomy," "Problems," and "Research" involve a 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 hematology, endocrinology, neurology, biology of cancer and related areas with electron microscopy. The faculty has done innovative work and shows special interest in modern techniques used in the teaching of various aspects of anatomy.
Anesthesia

Department Head: Jack Wyers

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 education of sophomores and juniors to the specialty; helps to develop in the junior student some concepts and technical skills related to resuscitation, airway management and the care of the critically ill patient; and offers the senior student those intense study in any 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 Boutron, Moyer, associate professors Dallacker, Sockel, assistant professors Biastrum, Gergis, Ghanam, Honick, Kodman, Uegana, clinical assistant professor Thiebaut

Courses

68:028 Clinical Anesthesia for Junior Students 7 a.

Introduction to general aspects of management of anesthetized patients; establishment of patient safety and evaluation of cardiovascular system including; evacuation in region and local blocks, etc. appropriate

68:031 Clinical Anesthesia 4 to 8 a.

Intensive and practical experience in various facets of anesthesia for surgical patients. Student learns basic techniques of general, spinal, epidural and percutaneous anesthesia. Instruction in monitoring and recognizing possible complications; management of complications of surgery for general anesthesia; impact on respiratory and cardiovascular function and various methods of anesthesia; in-
included are clinical anaesthesiology, basic science anaesthesia, and morbidity and mortality conferences; four students, subscription time: four to eight weeks; offered all year.

116:011 Intensive Care

Student learning involved in evaluation and treatment of seriously ill patients in Intensive Care Unit; arterial blood pressure, evaluation of pulmonary function and monitoring of mechanical states included; elective stress applied to postwar surgical patients and those pending prolonged ventilatory assistance; fluid balance and acid-base balance thoroughly emphasized; two students, subscription time: four or eight weeks; offered all year; prerequisite: four hours 116:010 Clinical Anaesthesia.

116:012 Clinical Anaesthesia Seminar

1 to 2 s.h. One-hour evening seminar discussing various problems encountered in clinical anaesthesia; correlations made between clinical anaesthesia and disease states; 10 students, subscription time: 16 or 32 weeks; offered September to June.

116:013 Mortality and Morbidity Conference

1 to 2 s.h. Two-hour group discussion of recent problems in clinical anaesthesia; particular stress applied to improved patient care in obstetric anesthesia; 10 students, subscription time: 16 or 32 weeks; offered all year.

116:016 Anesthesiology Research: Partual Function

4 to 8 s.h. Participation in research on effects of agents and situations which alter neural function; laboratory animal studies stressed; one student, subscription time: four to eight weeks; offered September to January; prerequisite consent of instructor.

116:181 Anesthesiology Research: Neuromuscular Pharmacology

4 to 8 s.h. Participation in research on effects of neuromuscular and action potential generation utilizing microelectrode techniques; one student, subscription time: four to eight weeks; offered September to June; prerequisite consent of instructor.

116:182 Anesthesiology Research: Central Nervous System

4 to 8 s.h. Participation in research on effects of anesthesia on central electrical activity of human; computer techniques; one student; subscription time: four to eight weeks; offered September to June; prerequisite consent of instructor.

Research is well-defined project relating to anesthesia; one student; subscription time: two to eight weeks; offered September to June; prerequisite consent of instructor.

Biochemistry

Department: Head: Carl R. Vestling

Degrees offered: B.S. and M.S.

For a description of the undergraduate programs, see “College of Liberal Arts”

Graduate Programs

Both the M.S. and Ph.D. degrees are offered. Financial support is available to all students who qualify and are selected for the Ph.D. program. Minimum entrance requirements include an undergraduate grade-point average of 2.9 (A=4.0) with a 3.0 average in science courses and a score of 1250 on the combined verbal and quantitative parts of the Graduate Record Examination: Aptitude Test. In addition, there are prerequisites of college-level courses in mathematics through calculus, physics, biology and physical chemistry.

All graduate students take 99:255 Biochemistry (a survey) and 99:261 Research Techniques in their first semester, and 99:266, 99:261 and 99:282 Seminar in the second semester. After consultation with the staff, the new student is assigned to a research laboratory for 99:261. Ordinarily, no more than two students are assigned to the same laboratory. An advisory committee consisting of the 99:261 instructor and two other faculty members helps the new student plan his or her course of study and evaluates his or her progress periodically during the first two years.

Current research interests include several aspects of physical biochemistry, effects of configuration on conformation and chemical and biochemical reactivity of the carbohydrates, hor- monal control mechanisms, structure and function of nucleo- proteins, gene control in higher organisms, biochemistry of glycoprotein and carbohydrate-protein complexes, mechanisms and control of protein synthesis. Biochemistry of proteins, characterization of liver and hepatoma enzymes, clinical bio- chemistry, neurobiochemistry, lipid metabolism, thermogenic mechanisms, conformational and allosteric information of glycolytic enzymes, analysis of enzyme systems utilizing cobra- toxin and bleomycin compounds, enzyme mechanisms, biosynthe- sis of active peptides and biochemical changes during development.

In addition to fulfilling the general degree requirements outlined in the “Graduate College” section of this catalog, a candi- date will assist in the teaching of biochemistry during two or three semesters as part of his or her graduate training.

Staff: professors BARKER, Hailey, BUR, Dryer, GUL, Hogenkamp, KATZIN, Kerneman, MONTGOMERY, RONSS, Vestling, PROFESSOR EMERITUS: BARKER, associate professors CHAN, CONWAY, Latch, PE- DRIE, SHIGET, STEELWAG, SWenson, assistant professors PAP, ROSKOLNIK, SPECTOR

Courses

99:150 Biochemistry

3 s.h. One-semester lecture course for freshmen majoring in molecular dynam- ics of biological systems and mechanisms to maintain order; prerequisite: 99:120 The Chemistry of Biological Materials

99:130 Biochemistry

3 s.h. Chemistry of major functional groups in compounds of biological systems and factors which influence their reactivity, stability, properties of water, energy and other topics; prerequisite: Chemistry 4115.

99:130A Biochemistry

3 s.h. Molecular dynamics of biological systems; how energy is obtained, stored and utilized by living system, how enzymes of matter are activated and controlled, how energy is used in living system, how macromolecular functions and biological processes of differentiation are integrated; prerequisite: Biochemistry 99:120.

99:191 Molecular Genetics

3 s.h. Selected classical genetic, gene, chromosomal, gene mapping, pathways and control of nucleic acid biosynthesis, DNA or genetic material, primary and secondary structures of DNA and RNA, lycopene in DNA, RNA and proteins, integration of proteins and nuclear and transcriptional and translational control of protein synthesis, molecular biology of differentiation; prerequisite: Biochemistry 99:120 and 99:130, Zoology 10170 or equivalent, with consent of instructor as necessary.

99:125 Physical Biochemistry

4 s.h. Theory and interpretation of physical chemical measurements which relate to biochemical systems; topics include thermodynamics, acid-base equilibria, multiple dissociation, ionic equilibria, diffusion, rate of reaction, mechanism, buffer action, concentration, surface tension, capillary attraction and surface tension, activity coefficients, absorption, refraction, fluorescence, light scattering, fermentation, etc. prerequisite: Chemistry 99:120, Mathematics 2234-35 or 40-41 and Chemis- try 4132, 122 recommended.

99:145 Experimental Biochemistry

4 s.h. For graduate students and advanced undergraduates in biochemistry and other university and graduate students interested in the techniques and characterization of components of biochemical systems; use of modern instru- ments and technique for spectroscopy, chromatography, electrophoresis, centrifugation and radioisotope studies; experimental design and interpretation emphasized; two lecture and two-three laboratory periods per week. prerequisite: Biochemistry 99:120 and Chemistry 91-4.

99:161 Physical-Chemical Techniques

4 s.h. Designed to accompany 99:150. Techniques of physical chemical measurements used in biochemistry and physiological research; microspectrophotometry, spectrophotometry, radioisotope spectrophotometry. prerequisite: Biochemistry 99:130, registration in Biochemistry 99:120.
Dermatology and Syphillology/Family Practice

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>99/150</td>
<td>Applied Biochemistry</td>
<td>3 a.h.</td>
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<tr>
<td>99/155</td>
<td>Biochemistry</td>
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**Dermatology and Syphillology**

**Department Head:** Robert G. Cornell

The aims of the Department of Dermatology are the teaching of medical students and training of residents, care of patients with skin disease, 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 eleven 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 Copelan, Czornay, Radcliffe; associate professor Fritsch; assistant professor Zoublike

**Courses**

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<tr>
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<td>60.1</td>
<td>Dermatology Clerkship</td>
<td>3 a.h.</td>
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<td>60.2</td>
<td>Dermatology Elective</td>
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**Family Practice**

**Department Head:** Robert E. Kastel

Courses appropriate to the field of family practice are included throughout the four-year medical curriculum. In the senior year a variety of electives is available, intended to trace the student in the skills of family medicine. These electives include rotations at Barnesville Park Country Hospital, Deo Memorial; 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, graduates of 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 concept of health care; this concept integrates the patient, allied health
professionals and the physicist in providing comprehensive family-oriented care. The program is intentionally flexible to allow each resident freedom to tailor his or her training to individual particular interests and needs and includes a broad exposure to internal medicine, pediatrics, obstetrics and gynecology, psychiatry, medical and surgical subspecialties and community 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 Oakdale campus and is designed to imitate as closely as possible private physicians' offices in the community. Here each resident develops 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 participating 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 Bryen; clinical assistant professors Martin, Moenner, Parker, Wieder

Courses

Senior Electives
115/101 Family-Practice Clerkships: Broadlawns Polk County Hospital, Des Moines 4 to 8 a.h.

Four- to eight-week course, available all year, involving assignment to clinical services of Internal Medicine, Pediatrics, Obstetrics and Gynecology, and Surgery; experience individualized where possible; supervision by family practice resident and physician in charge of service.

115/102 Emergency Room: Broadlawns Polk County Hospital, Des Moines 4 a.h.

Four-week course, available all year, involves participation in care of patients seen in emergency room and required clinic; census follows hospital pattern; experience service and continuous participation to his or her own patients in treatment to return unless patient or staff physician or both request participation in hospital's general physical condition; involves transfer to inpatient unit; Department of Psychiatry will participate in psychological assessment when indicated. Four-week course, available all year.

115/104 Preceptorships in Family Practice

Preceptorships available with selected family physicians in Iowa representing variety of rural and urban practices, both solo practices and those practicing in varying group sizes. Four- to eight-week course available all year.

115/105 Family-Practice Clerkship: Cedar Rapids 4 to 8 a.h.

Four- to eight-week course, available all year, involves exposure to clinical services of Internal Medicine, Pediatrics, Psychiatry, Obstetrics and Gynecology, and Surgery; experience individualized as much as possible.

115/106 Emergency Room: Cedar Rapids 4 a.h.

Assignment to emergency room of either St. Luke's or Mercy Hospital under supervision of family practitioner on call and staff physician experience includes care of emergency room patients and participation in care of inpatient unit; four-week course, available all year.

115/107 Community-Hospital Clerkship 4 a.h.

Exposure to community medicine and breadth of involvement family physician has with local hospital and community; student works with any of several community hospitals in Iowa under supervision of staff family physicians and practices in hospital care of patients on all services; four-week course; available all year.

115/108 Team Approach to Health Care 4 a.h.

Teaching team comprising and officer consisting of a family physician and resident working in Oakdale Model Office with social worker, nurse and clinical laboratory technician; provides residents with an opportunity to observe modified patient care team practice for their skills and manner in which they treat patient care; four-week course offered at least once each year.

115/109 Independent Study 2 a.h.

Student works with approval of department in investigative study of his or her choice in area of family medicine, community medicine, public health, medicine of special interest, available all year, with registration fee of two weeks which may be extended to four weeks for four semester hours of credit

115/111 Family Practice Mason City 4 a.h.

Rotation in variety of services at 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.

115/888 Special Study: Family Practice 2 a.r.

Per students wishing to arrange special clerkships, which may include foreign rotations, with prior approval from Department; completed Summary of Individu-
ally-arranged Clerkships (to be submitted in dean's office) must be submitted 10 days prior to beginning of rotation; must 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

Graduate Coordinator: Paul G. Nutrasie

Degrees offered: M.S., Ph.D. (qualification for American Dietetic Asso-
ciation membership also offered via internship program).

The program in Human Nutrition is administered by a College of Medicine-Graduate College advisory committee. Lecturers, thesis advisors and seminar participants are selected 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 Dietetic Association membership, establishes a base for study toward the M.S. or Ph.D. degrees and encourages cultural interests. 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-

pursuit of individual interests in clinical, metabolic and administrative research and study. University Hospitals pay interns a stipend which partially covers educational expenses.
Human Nutrition

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, psychology, education, marketing, computer science, statistics, labor and personnel management, and food science.

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 hospital 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 advisers.

Supplemental Activities

Students are encouraged to attend medical grand rounds, pediatrics 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 exceptional 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.

Requirements 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 wherein 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 include 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) Filer, Read (Pediatrics), Dryer (Biochemistry), Osborn, Osman (Home Economics), Lawerence (Preventive Medicine), Mason (Surgery); associate professors Anderson (Pediatrics), Crowley, Hubel (Internal Medicine), Ross (Pathology), Bryan (Family Practice), Segin (Biochemistry and Pediatrics); assistant professor, (Internal Medicine), Specter (Biochemistry), Healy (Pediatrics), instructor Bums (Preventive Medicine)

Courses

65201 Nutrition Seminar 1 s.h.
Preparation of current research findings in nutrition, therapeutic and administrative aspects of dietetics
65202 Nutrition Seminar 3 s.h.
Nutritional aspects of disease and illness, emphasizing therapeutic roles of food presented by medical and allied staff nutrition, lectures, demonstrations, bedside rounds, patient conferences, conferences
65203 Clinical Nutrition 3 to 4 s.h.
Nutritional aspects of disease and illness, emphasizing therapeutic roles of food, present by medical and allied staff. Lectures, demonstrations, bedside rounds, conferences, patient conferences
65204 Projects in Nutrition 2 to 4 s.h.
Consideration of N-695, but may be taken as an independent unit
65205 Projects in Nutritional Science or an
Advisory staff, therapeutic, epidemiological, food science, metabolic studies; introduction to research
65206 Projects in Nutrition or an

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 endocrinology, gastroenterology, hematology, infectious diseases, renal and hypersensitivity diseases, 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 and the specialties.

Graduate Program

The Department offers a three-year program, and an approved residency program of high quality. In addition, most specialties offer clinical and research fellowships for periods of one to two years. These permit the development of special knowledge and skills relevant to the specialty. Candidates for fellowship 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 the City, and in the Veterans Administration hospitals in Iowa City and Davenport.


Courses

78250 Clinical Medicine for Junior Medical Students 5 h

78251 General Medicine Diagnostic Clinic 2 or 4 h

Schedule for five days a week a diagnostic clinic; clinical evaluation of medical problem; emphasis on diagnosis and management of common medical problems presented to internists in practice, as well as on aspects of management of office practice, planning of patients and cooperation in ambulatory health care. Six students, subscription time two to four weeks, offered all year.

78252 Medicine Consultation Service 2 h

Emphasis on educational development of ability to assess and recommend specific therapy for hospitalized and ambulatory patients while acting in consultant role; two students, subscription time two weeks, offered all year.

78250 Clinical Allergy-Immunology 2 or 4 h

Experiences in diagnosis and treatment of problems in allergy and immunology encountered in office practice, patients with allergies and immunologic disorders evaluated by students under staff supervision; participation in instruction of special studies carried out in allergy laboratory; subsequent association with specific clinical problem; two students, subscription time two to four weeks, offered all year.

78251 Survey of Internal Medicine 3 h

Lectures, demonstrations and discussion in basic principles of immunology and immunopathology; subscription time full semester.

78250 Research to Advanced Practice in Medicine 12 h

Preliminary interview and orientation in one to two areas of clinical practice. Students are assigned to clinical supervisors and supervision is held upon completion of an independent research experience; two students, subscription time three semesters, one student, consultation, with appropriate approval required for registration.

78250 Cardiology: University Hospitals 4 h

Development of breadth in depth in diagnostic and therapeutic problems common in cardiology; participation in evaluations and care of patients seen in Cardiology and Intensive Care Units, heart transplantation and Cardiology fellowships to the University Hospitals.

78250 Reproductive Immunology, Pre- and Postpartum Condition and Obstetric Care 4 h

Preparation of obstetric patients for delivery and postpartum period; emphasis on obstetric care for patients with special reproductive problems. Students, subscription time four weeks, offered all year.

78250 Clinical Cardiology: VA Hospital 4 h

Emphasis, as in elective 78250, on breadth and depth in diagnostic and therapeutic problems common in cardiology; preparation for cardiology; experience in cardiology clinic; medical surgery patients and cases in acute postpartum period, however, greater emphasis in treatment of patients with acute myocardial infarction; responsibilities of inpatient patient care in 18-bed Cardiology Ward and Coronary Care Unit; one student, subscription time four weeks, offered all year.

78250 Diagnostic Cardiac-Catheterization Laboratories: University Hospitals 2 or 4 h

Working up patients admitted for cardiac catheterization; personal involvement in use of cardiovascular techniques in evaluating cardiovascular dynamics and in
Microbiology

Department Head: J. R. Porter
Degrees offered: B.S., M.S., PH.D.

(For a description of the undergraduate program, see "College of Liberal Arts")

Students are admitted as Ph.D. candidates only. As such they are expected to demonstrate a broad and thorough knowledge of microbiology. All candidates must show capacity for doing independent research and writing a satisfactory doctoral dissertation.

In general, the graduate student will be expected to have fulfilled the requirements for an undergraduate major in microbiology. This includes the electives or their equivalents as determined by the Department. Usually there is no language requirement for an advanced degree. Substitutions may be made in the case of students who have completed their work for a professional degree (M.D., D.D.S.) and wish to continue in the study of a particular phase of microbiology.

The grade-point average for all work must be 2.7 or better.

The M.S. degree (with thesis) may be awarded after completion of part of the requirements for the Ph.D. degree. It is intended for students desiring either to continue their graduate work or to take up other professional work for which training in research is needed. A thesis based on the candidate's own research is required for the master's degree, and the student will be expected to pass an oral examination on the thesis. In no case will the M.S. degree be granted to a candidate with less than 36 semester hours of graduate credit (includes research credit).

All candidates for advanced degrees will be expected to assist in teaching in the Department during their course of study. (See "Graduate College").

Facilities

Microbiology is housed in a new $16-million Basic Sciences Building. Located on the east perimeter of the University's Health Center campus, the building provides the most advanced facilities expressly designed for teaching and research in microbiology, anatomy, physiology and biophysics, biochemistry, and physiology.

The Department is a participant in the National Science Foundation's University of Iowa "center of excellence" program in the biological sciences.

The Department cooperates with affiliated departments in the various colleges on the campus, affording ample opportunity for students to avail themselves of the University's diverse course offerings, seminar programs and joint-research efforts. For example, courses and seminars in genetics, ecology and electron microscopy are taught on an interdepartmental basis.

See "College of Liberal Arts"

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See "College of Liberal Arts"
Neurology

Department Head: Joseph 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 Aneuysm Project, funded by the National Institute of Neurological Diseases and Stroke, and collaborates with the Department of Ophthalmology in sponsoring the Neurosensor Center, which is supported by the National Institute of Neurological Diseases and Stroke. The Neurosensor 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 clinical 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 such 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, electroencephalography and neuroradiology. A well-equipped neurochemistry laboratory is available for research and clinical studies of 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 Finckham, assistant professors Taylor, Nibbelin.

Joint Appointments: professors McCormick (Neuropharmacology), Beuton (Psychology-Neurology), Knott (Electroencephalography-Neurology), associate professor Bell (Pediatrics-Neurology), associate professors Gee (Psychology-Neurology), Lorkovic (Neurology-Physiology), Sylt (Chief of Neurology Service, Iowa City VA Hospital); research associate Schottenius (Neurology-Physiology).

Courses

6463 Lectures to Nurses or, cr. 1.6.
6471 Clinical Neurology for Junior Medical Students 2 a.h.
6476 Lectures to Occupational Therapists or, cr. 1.6.
6479 Fundamentals of neurology as applied to occupational therapy; second semester 8 a.h.
6493 Advanced Basic Neurology 2 a.h.
6495 Special lectures and demonstrations in basic neurology, particularly neoplastic disease of nervous system, and staff and invited lecturer seminar 8 a.h.
6517 Neurology-Neurosurgery Conference Review of patients presenting diagnostic problems common to both departments 8 a.h.
6518 Principles of Neurology 2 a.h.
6519 Lectures, demonstrations and case presentation of neurological disorders usually treated by therapy; anatomy of nervous system reviewed and methods of electrical recording of brain injuries demonstrated 8 a.h.
6520 The Apheresis Disorders 2 a.h.
6521 Physical Aspects of Neurology 2 a.h.
6523 Analysis of Telereconditioning, classification and psychopathological mechanisms, same as 31227 2 a.h.
6524 Neurology for Psychologists 2 a.h.
6525 Functional relationships in man, analysis of behavioral disturbances associated with central damage; current applications of psychological test methods for inferring central status same as 31255 2 a.h.
6526 Advanced Clinical Neurology 8 a.h.
6527 Intensive period of experience dealing with diagnosis and management of patients with neurologic disease; either inpatient or outpatient capacity may be utilized, but not simultaneously; student performs initial assessment of patient and, through close liaison with staff, performs management, inpatient becomes centering responsibility of student; departmental conferences daily; one study for each month; course period: one month; offered all year 8 a.h.
652815 Research Projects in Clinical Neurology 12 a.h.
652816 Student clinic and research, with�uctor, original projects of clinical interest, with research and other activities described in three major diseases or neurologic syndrome; research of appropriate quality submitted for publication; advanced arrangements must be made for course; linear research as well as pertinent observations on study population included; one student; course period: three months, offered all year 6 a.h.
652817 Research Seminars 1 a.h.
652818 Weekly, one hour, several times during term, for junior-graduate research on neurology, presented by neurology residents and discussed by staff; 10 students; course period: 16 weeks; offered all year
652819 Neurochemistry 4 a.h.
652820 Neurophysiology special interest areas of biochemical chemistry as related to neurological disease; selected demonstrations of laboratory techniques; one student; course period: one month; offered all year
Behavioral and Language Disorders

Supervised study of types of behavioral impairments and aphasic disorders shown by persons with various causes; their significance for identifying persons, severely and those of normal lesions; one student; course periods: two months; offered all year.

Neurotology

4 s.h.

Supervised training in various aspects of diagnostic and surgical procedures performed on patients whose initial studies are in pediatrics or surgery; good health status with no current neurological disease is required; course periods: one week; offered all year.

Pediatric Neurology

4 s.h.

Clinical practice supervised in various aspects of diagnostic and surgical procedures performed on patients; residents include in their practice the work of other clinical departments, including neurosurgical procedures; one student; course period; four weeks; offered every September 1 to May 15; open to Pediatrics.

General Neurology

or. arr.

Clinical practice supervised in various aspects of diagnostic and surgical procedures performed on patients; residents include in their practice the work of other clinical departments, including neurosurgical procedures; one student; course period; four weeks; offered every September 1 to May 15; open to Pediatrics.

Nuclear Medical Technology

See "College of Liberal Arts."

Obstetrics and Gynecology

Department Head: W. C. Riebel

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, lab work, and outpatient clerkship. The Obstetrics and Gynecology Clerkship (6604) gives the student a core of information in the field, as well as a chance to become familiar with the medical students who will be caring for women.

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 student rotates through various divisions of the Department of Obstetrics and Gynecology and becomes familiar with the work of the different sub-specialties. Additional training is obtained in obstetric clinics in women, Children's and Women's hospitals. During the fourth year, the residency is completed in normal and abnormal obstetrics, advanced gynecologic surgery, and roentgenology, endocrinology, oncology, family planning and endoscopic procedures.

Additional training in obstetric endocrine disorders is available in endocrinology and oncology.
for identification of problems and development of methodological approaches, but anticipates that the student will function with considerable degree of independence; one student; subscription time: five weeks; offered all year.

58-156 Advanced Ocular Anatomy: Prophylaxis 2 a.h.
Dependent in nature. No research projects. Anatomic aspects of eye and visual system. Techniques learned through participation in surgical procedures and related case care; month opportunity for exposure in operating and delivery rooms, ward rounds, problem clinics and specialty clinics such as ophthalmic, high-risk ophthalmic, etc., daily teaching conferences; noon and noon sessions provided; two students; subscription time: four weeks; offered all year.

58-157 Advanced Ocular Clinical Clerkship: Des Moines 4 a.h.
Essentially same as third-year clerkship; supervision of responsibility of student; one student; subscription time: four weeks, offered all year.

58-158 Advanced Ocular Clinical Clerkship: Des Moines 4 a.h.
Work at St. Luke's Hospital, which has ophthalmic patient volume of approximately 1000 patients per year; includes three ophthalmic residents, one student; subscription time: four weeks, offered all year.

58-159 Advanced Ocular Clerkship: Ames 4 a.h.
Work under direction of four McFarland Clinic ophthalmologists, clinical group responsible for approximately 900 patients per year; duties and responsibilities similar to Des Moines, with addition of patient exposure in closed group, specialized service, noon and noon sessions provided; one student; subscription time: four weeks; offered all year.

58-160 Advanced Ocular Clerkship: Dubuque 4 a.h.
Work under direction of three medical associates, hospital physicians, clinical group responsible for approximately 900 patients per year; duties and responsibilities similar to Des Moines, with addition of patient exposure in closed group, specialized service, noon and noon sessions provided; two students; subscription time: four weeks; offered all year.

Ophthalmology

Department Head: Dr. Robert G. Bristow
Degree offered: M.D.

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 provides clinical training of medical students and resident physicians but is also available to graduates in biology and medicine. The primary purpose is to qualify medical graduates for careers in ophthalmology.

Emphasis is placed on a scientific approach to problem-solving in diagnosis and treatment. The training program lasts three and a half years, of which six months are reserved for a laboratory or library-based project.

Clinical facilities are available at three locations besides University Hospitals. The clinical training program culminates in qualification for the examination of the American Board of Ophthalmology.

The Master of Science degree is not offered as a primary professional objective but is available to specialists in laboratory skills applicable to ophthalmology. The degree program can be pursued concurrently with the clinical training program, or independent of it. The usual requirements for the Master of Science degree apply. A thesis has to be defended.

The Department maintains several research laboratories; tumor diagnosis, including electron-microscopic, electrophysiology, microbiology, and histopathology; and ophthalmic workshops, fellowships, and research projects are available.

The Department sponsors biennially an international symposium, annually a national conference and occasionally a statewide program of continuing education.

Several subspecialties are represented in the Department: ocular pathology and physiology, pediatric ophthalmology, retinal disorders, glaucoma, neuro-ophthalmology, echography, contact lens and refraction service, and medical ophthalmic photogaphy.

Two features of the Department are outstanding: a large full-time faculty, and the opportunity to prepare for a career of teaching and research in ophthalmology.

Staff: professors Blodi, Leitblad, Wraab, associate professor Kolder, Olson, Thompson; assistants: professors Barton, Golden, Phillips, Scott; research associates Allen, Bass; associate Brown, Finster.

Courses

67-150 Ophthalmology 4 a.h.
Two-week course in ophthalmology for first-year students, emphasizing surgical aspects, reading of diagnostic slides, studying of reference sources; earning teaching credit towards degree and certification examination; two to three students.

67-152 Ophthalmology 4 a.h.
Two-week course in ophthalmology for second-year students, emphasizing surgical aspects, reading of diagnostic slides, teaching credit towards degree and certification examination; two to three students.

67-154 Ophthalmology 4 a.h.
Two-week course in ophthalmology for second-year students, emphasizing surgical aspects, reading of diagnostic slides, teaching credit towards degree and certification examination; two to three students.

67-156 Ophthalmology 4 a.h.
Two-week course in ophthalmology for second-year students, emphasizing surgical aspects, reading of diagnostic slides, teaching credit towards degree and certification examination; two to three students.

67-158 Ophthalmology 4 a.h.
Two-week course in ophthalmology for second-year students, emphasizing surgical aspects, reading of diagnostic slides, teaching credit towards degree and certification examination; two to three students.

67-159 Ophthalmology 4 a.h.
Two-week course in ophthalmology for second-year students, emphasizing surgical aspects, reading of diagnostic slides, teaching credit towards degree and certification examination; two to three students.

67-160 Ophthalmology 4 a.h.
Two-week course in ophthalmology for second-year students, emphasizing surgical aspects, reading of diagnostic slides, teaching credit towards degree and certification examination; two to three students.
Oral Surgery

Department Head: Marie L. Hale
Degree: B.S.

(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 training 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 basic clinical and scientific departments which stimulate and support scholarly research and superior clinical practice. The facilities 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 neuropsychology, anesthesia, physical diagnosis and laboratory procedures.

The intern becomes familiar with the principles of surgery and develops surgical skills by performing and assisting in 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
Hospital rules and regulations, patient and Department records, general information relative to hospitalized patients.

87-88 Basic-Sciences Review
Basic surgical principles in dental; broad inspection classifications and techniques, ray design, suturing, etc.

87-88 Clinical Oral Surgery
Clinical practice on assigned patient problems.

87-88 Pathology
Assignments for non-rotators.

87-88 Gerontology
Assignments for non-rotators.

87-88 Plastic Surgery
Assignments for non-rotators.

87-88 Surgical Pathology
Assignments for non-rotators.

87-88 Preclinical Rehabilitation
Assignments for non-rotators.

87-88 Prosthetics
Assignments for non-rotators.

87-88 Preclinical Rehabilitation
Assignments for non-rotators.

87-88 House Officer Program
Assignments for non-rotators.

87-88 Advanced Oral Surgery Seminar
Assignments for non-rotators.

87-88 Literature Board and Journal Club
Assignments for non-rotators.

87-88 General Surgery
Assignments for non-rotators.

87-88 General Surgery
Assignments for non-rotators.

87-88 Research: Thesis Project
Assignments for non-rotators.

87-88 Research: Thesis Project
Assignments for non-rotators.

87-88 Research: Thesis Project
Assignments for non-rotators.
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 surgery, 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 amputations and prosthetics.

The Academic Program

This program begins at the end of the internship year. After completing 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 polyethyl dysplasia and scoliosis.

Biochemistry—in conjunction with the College of Engineering, biomechanical problems of the upper extremity and biomechanics of the hip and the leg.

Cell Biology and Pathology—ultrastuctural studies on normal bone, cartilage, tendons and muscles, and on those altered by experiment and disease.

Tissue Transplant and Radiopaque Diet—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 Veteran's 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. Specialized clinics deal with such problems as accidents, club feet, congenital dislocated hips, neuromuscular disease, metabolic diseases, amputations, hips, knees, hands, splints and trauma.

Approximately 1,500 major operations are performed each year under anesthetics 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 impaired.

Staff: professor Boeblinger, Pfaltz, Larow, Pomeroy, Cooper, professor emeriti Stearns, Paul; associate professor Pedrotti; assistant professors Scottman, Stauder, instructor Speagle.

Courses

76:2 Principles of Orthopedics

Or: 3 h.

For junior medical students during year requiring for Orthopaedic Fellowship for Senior Medical Students

4 h.

Assignments for any time period depend, preferably one to two months, to冢 late daily times of student's choice, including courses, adult orthopedics (9 h.), children's orthopedics, adult and children's rehabilitation, hand and foot surgery, each man carries responsibility to present orthopedic cases analogues to those of the residents and tutors on clinical, ward admissions and operating room, at discretion of staff members; lectures, conferences and research reports. 2 h.

76:11 Fundamentals of Orthopedics

Or: 3 h.

For male health sciences students only; prior approval of instructor required; lectures, demonstrations and review presentations of orthopedic diseases from standpoint of etiology, clinical signs and symptoms, treatment and prognosis.

76:25 Biomechanics

2 h.

Kinetics of natural and pathological motion, for graduate in medicine and physical education for graduate students.

76:55 Advanced Principles of Orthopedics

3 h.

Lectures on and demonstration of common problems of orthopedic care.

76:10 Postgraduate Courses in Orthopaedic Surgery

Or: 3 h.

Observation of all phases of clinical orthopedics, clinics, ward care, operations, and seminars which will broaden knowledge of problems of orthopedics. 2 h.

76:21 Pediatric Orthopedics

3 h.

Weekly conference to review and discuss all cases operated upon in preceding week, responsibility for report on each case to the student's supervisor.

76:22 Nursing Conference

2 or 3 h.

For the nurse, discussion of problems related to orthopedic surgical specialty, one hour for each major problem encountered, including cases of injuries and noninjuries.

76:14 Bone-Pathology Seminar

1 h.

Weekly seminar for study of bone lesions from surgical and microscope specimens; for study of bone lesions from normal, pathological and radiation, Pathology, Orthopedics and Surgery.

76:150 Fracture Management

Or: 1 h.

For senior medical students, one hour weekly for eight weeks; assignment to trauma service, full participation in care of patients under these supervision of staff.

76:16 Laboratory Experience

Or: 2 h.

For senior medical students, by arrangement with staff, facilities and supervision available for laboratory program in biochemistry of connective tissue, cartilage for electron microscopy of ligaments, cartilage, bone and cartilage (molecular), biomechanics of joint function and disease, clinical research.

76:16A Anatomy of the Extremities and Spine

Or: 4 h.

Weekly laboratory course with material available for particular discussion and for routine study of surgical approaches.

87:317 Bone-Panathyology Seminar

Or: 3 h.

Weekly seminar for study of bone lesions from surgical and microscope specimens.

87:318 Oral-Pathology Conference

Or: 3 h.

Examine and discuss conference of current clinical specimens.

87:309 Reading Project

Or: 3 h.
Otolaryngology and Maxillofacial Surgery
Department Head: Brian P. 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 ventilatory mechanism; facial plastic surgery; and 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 resident 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, collagenase 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, late July to October 15 of each year.

After passing an 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 can 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.


Courses

60:203 Basic Otolaryngology Science

60:201 Research Techniques in Otolaryngology

60:210 Clinical Conference in Otolaryngology, Rhinology and Maxillofacial Surgery 1 s.h.

Presentation of diagnostic methods and outlined medical management for selected patients may be required.

60:211 Clinical Otolaryngology, Rhinology and Maxillofacial Surgery 2 s.h.

Diagnosis and treatment of patients in areas of rhinology, rhinology, endoscopy and maxillofacial surgery; systematic review and refinement of ENT examination techniques; training in anatomy, may be repeated.

60:212 Special clinical topics in rhinology, such as rhinology, pharyngology, rhinology, facial plastic surgery, rhinology, radiology.

60:213 Seminar: Medical Audiology

Critical review of audiological procedure used in examination of patients.

60:214 Seminar: Otorhinolaryngology and Related Fields 1 s.h.

Clinical emphasis on otorhinolaryngological and related fields, may be repeated.

60:215 Research Otorhinolaryngology

Research completed in conjunction with thesis requirements for M.S. degree, investigation of projects which may be approved by faculty advisor for Departmental research committee, may be repeated.

60:216 Dental Treatment of Maxillofacial Deformities

Clinical orthodontics for patients with maxillofacial deformities; limited to graduate students in dentistry.

60:217 Seminar in Maxillofacial Rehabilitation

Weekly seminar emphasis on various types of facial deformities; limited to medical and dental graduate students.

60:218 Maxillofacial Prosthesis

Clinical prosthetic treatment for patients requiring intra- or extra-oral prosthesis, including facial and body prosthesis.
Pathology
Department Head: George D. Pnisk
Degree offered: M.S.

The Department offers a wide range of formal courses and training programs designed for medical, dental, and graduate students. The specialty of interest is 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 tape-slide programs, programmed texts, autopsies, laboratory tours, clinico-pathological conferences and small group discussions of selected case material.

The course in general pathology introduce the student to the general responses of the body and to various types of injury, including inflammation, neoplasia, immune responses, etc. During the course 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.

Graduate

Coursework leading to the Master of Science degree in pathology is available to students of medicine and medical technology. The program is quite flexible in design, to accommodate the special interests and experiences of the individual student. In general it is structured around a research project pursued under the guidance of a selected faculty member; but it allows the student adequate opportunity for formal coursework in pathology and other basic sciences.

Postdoctoral

The Department is approved for two straight internships in pathology and 18 residencies, 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 chemistry, medical microbiology, hematology and blood bank. Adequate opportunity is afforded for concentrated study in such subspecialties as neuropathology, dermatopathology and gynecopathology.

To provide these special experiences, the faculty includes members who have special interests in blood coagulation and its disorders, and diseases of the nervous system, gastrointestinal tract, skin, lungs, hematopoietic tissues, heart and blood vessels, as well as medical microbiology, medical chemistry, hematology and blood banking.

A special postdoctoral training program is also offered in medical chemistry designed for Ph.D. biochemists.

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

Undergraduate programs are supported by a recently-remodeled student laboratory, as well as conference rooms for small group discussions. At present the Department houses a newly-remodeled modern histopathology laboratory equipped for efficient processing of tissue specimens; a special stain laboratory; a special hematopathology histotechnique laboratory; an autopsy room with two dissecting tables; a cytology laboratory; an immunopathology 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.

Courses

All courses are open to instructor consent.

6801 Introduction to Medical Technology 1 ph.

Lectures, survey of roles of medical technologist in various diagnostic laboratories, professional organizations, certification relationships with other laboratory professions.

3600 Medical Technology Program 1 ph.

Lab. Rotation through all sections of clinical or pathology service laboratories under supervision, proficiency developed in performance of laboratory procedures on patient specimens, and organization of service laboratories learned.

6400 Principles of Pathology 1 ph.

Lectures and demonstration emphasis on: terms, mechanisms and principles of disease and disease ability to communicate these in simple terms; topics include inflammation, infection, chambers of growth, defenses, degeneration and necrotic metabolic aberrations; introductory course for allied health professional students.
Pediatrics

Department Chairman: Daniel Demphy

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 Ryan Memorial Children’s Hospital (Iowa Methodist, Des Moines). Thus, the Department has extensive opportunities for general and specialized training in the broader aspects 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 Bell, Demphy, Filer, Pomeranz, Gauchard, Hardy (Psychology), Lasser, MacQueen, Read, Ramboli, Rowley (Psychology), Scholten, Zeilweger; clinical professor, Hill; associate professors T. A. Anderson, Baker, Brown, Hyne, Ionaessa, Johnson, Krijgs, LaCanci, Silber, Spingst (Biochemistry), Stelmach, Taylor; assistant professors Bets (Speech and Pathology), Eklof, Friedman (Psychology), Rame, Taylor (Neurology), Youkon, clinical assistant professors D. W. Anderson (Psychology), Winterneg, associates Chandronnici, Dee (Psychology), Hayes (Psychologist), Instructor Cruckshank

Courses

76107 Clinical Clerkship in Pediatrics

6.0 s.h.

Principles of health, influence of factors and treatment of acute and chronic diseases in children; lectures, demonstrations, participation in patient care, daily rounds, ward work, emphasis on diagnosis and evaluation, training, behavior problems and/or of important disorders affecting children; for third-year medical students.

76103 Health Supervision of Children

1.0 s.h.

Special program for the 1-5-year-old child in another course for fourth-year students.

76502 Child-Health Clinic

2.0 s.h.

Anticipatory care in Child-Health Clinic one-half day, five days weekly for four weeks, for fourth-year students.

76702 Internal Pediatrics

2.0 s.h.

Emphasis on internal care, including hospital care of normal newborns and premature infant in both nursery and nursery in settings; emergency problems of newborn, resuscitation, nutrition and fluid and formula feeding, parent education regarding infant

76976 Diagnostic Cytology for Medical Technologists

3.0 s.h.

On-the-job training for cytologic techniques and preparation in cytology screening, diagnosis by medical technologists; other students by arrangement.

76977 Histopathology Techniques for Medical Technologists

3.0 s.h.

On-the-job training and informal procedures relating to pathology; lecture for medical technologists; other students by arrangement.

76112 Medical Jurisprudence

3.0 s.h.

Lectures and discussions based on student research of medical-legal cases from Law Library or recent U.S. Supreme Court decisions in law, business, insurance and office management; medical and other students by arrangement.

76131 Hematology for Medical Technologists

7.0 s.h.

Lecture and laboratory: review of blood and pathobiology of blood-forming tissues; include: identification, description and evaluation of blood cells, prevention of transfusion reaction and blood typing by agglutination; identification and analysis of blood typing by serologic techniques; recognition of signs and symptoms associated with blood disorders; classification of blood dyscrasias; techniques for blood grouping, compatibility testing, antibody identification and typing: abnormal medical technologists.

76132 Microbiology for Medical Technologists

7.0 s.h.

Lecture and laboratory: identification of pathogenic microorganisms by examining the principles and techniques of bacteriology, histology, serology, virology and parasitology; medical technologists.

76133 Clinical Chemistry for Medical Technologists

7.0 s.h.

Lecture and laboratory: theory and practice of routine biochemistry procedures applied to clinical practice; methodology, instrumentation, assay and reaction preparation; techniques, blood banking, immunochemistry, clinical chemistry, senior medical students, combined M.D.-graduate degree students and residents.

76123 Hemato-Pathology Clerkships

3.0 s.h.

Supervised practice in hematology; senior students, combined M.D.-graduate degree students and residents.

76129 Special Studies

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70086 Neonatal Pediatrics and Pediatric Intensive Care 2 e.h.

Program consists of aspects of 70056 with care of seriously ill infants in Pediatric ICU the weeks.

70087 Community Pediatrics 4 e.h.

Student participates in design and conduct of original studies designed to address issues related to care and outcome of medical problems experienced by neonates; maximum students four; two weeks.

70088 Community Pediatrics 2 e.h.

Can be taken as interests of individual student, who participates in pediatric specialty clinic in any combination selected; maximum six students; four weeks.

70089 Community Pediatrics 4 e.h.

Emphasis on public health aspects of pediatrics, including analysis of community health resources, identification of community needs, development of mass programs for screening or disease prevention, immunization and school health; maximum two students; four weeks.

70090 The Multidisciplinary Child 3 e.h.

Emphasis on coordinating diagnostic workup of a child with multiple problems, medical and/or psychological; two weeks.

70091 Primary Health Care of the Child with Chronic Health Problems 1 e.h.

Combines elements of primary care and specialty care; four weeks.

70092 Growth, Pediatric Nutrition, Gastroenterology and Neonatology 4 e.h.

Four-week elective emphasizing clinical aspects of growth and development of pediatric nutrition, gastroenterology and neonatology and including seminar program, clinical skills, externships in nutrition and research data; maximum eight students; five weeks.

70093 Growth, Pediatric Nutrition, Gastroenterology and Neonatology 3 e.h.

Four-week elective focusing on clinical aspects of growth, nutrition, endocrinology and gastroenterology; students electing to continue for additional five weeks may elect to elect either clinical or research aspects.

70094 Community Pediatrics: Preventive Pediatrician 4 e.h.

Permits exposure to primary practice of pediatrician; student observes and participates with practicing pediatrician in daily office and hospital care of children; November, December, January, February, April; four weeks.

70095 Community Pediatrics: Iowa Methodist Medical Center, Des Moines 4 e.h.

Gives student opportunity to work in community-based hospital and gain experience in care of patients as seen in general practice and in specialty referrals seen in children's hospital; one student; four weeks.

70096 Pediatric Hematology 4 e.h.

Concerns hematopoiesis and its role in clinical approach to hematological problems and tumors seen in children; one student; September through May; four weeks.

70097 Pediatric Neurology 4 e.h.

Provides exposure to various aspects of pediatric neurology; students may choose to continue for additional five weeks; one student; September through May; four weeks.

70098 Child Development Clinic 4 e.h.

Intensive in nature, contains screening tests for developmental and emotional problems in children, and involves students in low-income communities for these practices; one student; September through May; five weeks.

70099 Pediatric Cardiology 3 e.h.

Emphasis on theoretical and clinical aspects, including cardiac catheterization; two students; five weeks.

70099 Pediatric Cardiology 4 e.h.

Combines of Pediatric Cardiology 1 and elects four weeks for participation in clinical research program of student's choosing or at direction of faculty member; while continuing clinical practices; two students; eight weeks.

70101 Pediatric Cardiology 4 e.h.

Two-hour weekly seminar presenting pertinent topics in pediatric cardiology; basis of ECG, echocardiogram and chest radiography reviewed; discussion of current cardiac problems; offered three months; ten weeks.

70102 Pediatric Cardiology 4 e.h.

Time spent on any of pediatric services—surgery, pediatrics or adult care; care workshops, direct patient responsibility under supervision of attending physicians; three students; five weeks.

70103 Evaluation of Child Behavior 4 e.h.

Familiarizes with evaluation techniques and management of children presenting behavioral problems; four students; four weeks.

70104 Pediatric Endocrinology and Diabetes 4 e.h.

Familiarizes with clinical aspects of endocrine disorders; intensive experience in management of childhood diabetes; two students; September through May; four weeks.

70105 University Hospital School 2 e.h.

Includes participating in pediatric resident and their family's clinical evaluation, parent counseling, therapy regimes and introduction to humanities of the hospitalized child; two students; September through May; two weeks.

Pharmacology

Department Head: J. P. Long

Degree offered: B.S., Ph.D.

The Department is involved in the professional education of pharmacy, dental and medical students. A recognized graduate program with a full series of courses has been developed. More recently, the educational program has been expanded to include clinical pharmacology and clinical toxicology.

The Department possesses the offering pharmacology (71120) to undergraduate students with little or no science background. The lecture-discussion sessions emphasize the role of drugs in our society and establish a background so rational decisions can be made.

New, modern, well-equipped laboratories and lecture rooms are available for drug research and education.

The faculty participates extensively in postgraduate courses and conferences.

Extensive research and training grant programs involve members of the faculty; these programs often involve faculty from other departments and colleges. The Department participates in the Neuroscience Program, the NSF Center of Excellence and the Center for Biochemical Pharmacology and Toxicology.

Graduate Study

Prerequisites for graduate study include undergraduate backgroud in chemistry, biology and mathematics. Research areas include: enzymology, neuropharmacology, cardiovascular pharmacology, renal pharmacology, biochemical pharmacology, drug metabolism, bio-chemical toxicology and toxicology.

Required courses for the M.S. degree include graduate courses in physiology and biochemistry and 71000 Introduction to Pharmacology, 71201 General Pharmacology, 71203 Pharmacology Research, 71204 Pharmacology Seminar, 71206 Biochemical Pharmacology, 71207 Neurobiology and Behavior, 71208 Biochemistry and Biostatistics, 71210 Special Topics in Pharmacology and 71213 Toxicology or acceptable equivalents.

These requirements and the research for the thesis can be completed in two years or less. The degree is awarded upon satisfactory completion of comprehensive written and oral final examinations and acceptance of the thesis.

Required courses for the Ph.D. degree include all those required for the M.S. degree in addition. Completion of two or more courses in areas related to the student's interests, as approved by the advisor, is required. There is no Departmental foreign language requirement. However, individual faculty advisors may have such a requirement for their students. Satisfactory performance in written and oral comprehensive examinations, usually taken one year prior to expected graduation, is also required. These requirements and the dissertation
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, Sprent, Teshy, Williamson, Wilson, professor emeritus Gross; associate professor Steele, Van Orden; assistant professors Baron, Bhagavan, Fischer, Roberts

Courses

7118 Medical Pharmacology 4 s.h.
Lecture-laboratory; pharmacodynamic action and therapeutic use of drugs acting on central nervous system not included. first semester, sophomore year
7111 Pharmacology for Dental Students 5 s.h.
Lecture-conference-laboratory; pharmacologic action and therapeutic use of drugs concerned, emphasis on those of special interest in dentistry; second semester, junior year
71100 Introduction to Pharmacology 2 s.h.
Philosophical and experimental approaches to drug research; emphasis on general concepts and role of biological systems; chemotherapeutics and receptor theory included; no prerequisites, first semester
71110 Pharmacology Laboratory 2 s.h.
Lecture-laboratory; general principles; open to students in pharmacy and qualified graduate students; prerequisite biology and organic chemistry; second semester
71005 Pharmacology and Toxicology 3 s.h.
Combination of 71102-71105. Lecture-laboratory, emphasis on topics of special interest in pharmacology; open to students in pharmacy, first semester
71130 Drugs; Drug Action and Use 3 s.h.
Lecture-discussion; principles of drug action and drug toxicity; specific classes of drugs covered include antibiotics, anticoagulants, sedatives, stimulants, analgesics, anesthetics, and others; open to all students; course material general to students not having strong background in science; no prerequisites; five semester
71001 General Pharmacology 2 s.h.
Same as 71130, prerequisite introductory course in physiology and biochemistry, and consent of instructor
71003 Pharmacology Research 2 s.h.
cr. arr.
71004 Pharmacology Seminar 1 s.h.
cr. arr.
Consult Director for permission to register
71005 Cardiovacular Pharmacology 1 s.h.
Discussion of the development of new drugs for the treatment of cardiovascular diseases and mechanisms of action of cardiovascular drugs; prerequisite consent of instructor; five semester, alternate years, offered 1975-76
71006 Biochemical Pharmacology 2 s.h.
Lecture-laboratory. Principles and methods for drug absorption, distribution, excretion, metabolism, receptor interaction and enzyme inhibition; prerequisite 71103 consent of instructor; five semester, alternate years
71007 Pharmacology and Immunology 1 s.h.
cr. arr.
Lectures, laboratories, demonstrations and conferences on nervous system; present materials from anatomy, physiology, pharmacology, psychology and medical clinics in integrated fashion; graduate students in pharmacology and others who desire to participate in seminars in neuropharmacology in which review articles and important current research papers critically discussed; prerequisite consent of instructor; offered 1975-76, 1976-77
71046 Biostatistics and Biometry 3 s.h.
Purposes, applications of statistical analysis in design of experiments and interpretation of biological data; begins with student’s own, analysis of variance, linear regression, chi square, Fisher’s exact probability, Mann-Whitney U sign test, principles of biometry and experimental design; laboratory exercise consists of planning and conducting experiments; prerequisite consent of instructor; may be taken by free-year graduate students with permission of instructor
71010 Special Topics in Pharmacology 4 s.h.
cr. arr.
71012 Toxicology 3 s.h.
For pharmacology majors and other interested students; selected topics in pharmacology related to toxicology and chemicals; methods of drug-induced injury, mechanisms of drug-induced injury, method of terminating injury, general and specific antidotes, e.g., safety evaluations; forests and environmental toxins, consent of instructor; prerequisite 710; second semester, alternate years, offered 1976, 1978
71016 Clinical Toxicology 1 s.h.
Acute poisoning and treatment, general topics of interest in toxicology; prerequisite 710. 1 credit for pharmacologists or equivalent for first semester
71020 Clinical Pharmacology and Therapeutics Lecture and Lab 3 s.h.
Eligible 2 s.h.
Selection of 71020-71021. Lecture on Clinical Pharmacology and Therapeutics, special emphasis on pharmacologic approach to diagnosis and treatment of diseases in man; for intern and fourth-year medical students, pharmacy students, other premedical students; same as 71030 Internal Medicine, second semester

Physical Therapy

See “College of Liberal Arts”

Physiology and Biophysics

Department Head C. Adrin R. Hopper degrees 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 one year each of biology, physics, chemistry, physical chemistry and calculus. The undergraduate major is in narrowly prescribed, and the graduate student group conveniently 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 scholarly—primarily through research under the immediate supervision of an advisor—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 advisor, the thesis 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 Oskaloosa Campus about 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 Dicks, Folk, Halms, Hogden, Lingen, Schor-
tellius, Shipston, Wonder; associate professor Dinsen, Forsaker, Hill-
man, Jami, Searle, Thompson, Tipton; assistant professor Baker.
Farber, Larkovic, Mitchell, Phillips, Instructor Cooke, Cronkh, Inger.

Courses

72/15 Introduction to Human Physiology
2 a.h.
Basic concepts of human physiology; emphasis: Zoology 37.3, Chemistry 6.1, and 6.9 for equivalency, and consent of instructor; three lectures, one laboratory and one discussion weekly.

72/102 Physiology of Exercise
2 or 4 a.h.
Basic concepts of exercise and adapted adaptations to vigorous exercise reac-
tions, and the effects of endurance training on the cardiovascular system, both local and circulatory; two lab, three semester; alternate years; offered 1971-72.

72/111 Neurophysiology and Behavior
4 a.m.,
Interdisciplinary study of organization and function of nervous system; same as 31/10, 40/10, 71, 207 but, when appropriate, arrangements made for graduate students in physiology, prerequisite consent of instructor.

72/112 Endocrinology for Medical Students
1 a.h.
Same as 50/109 and 60/10; for graduate students; core course in endocrinology; given first half of second semester; every other year.

72/141 Analytical Study of Physiology
2 a.h.
Designed for students of physical and engineering sciences to provide a background basis in application of their training to biomedical problems; includes basic con-
cepts of physiology; emphasis on concepts dependent upon physical theories; prerequisite; two full years of physical or engineering corework and introduction to differential equations; first semester.

72/143 Analytical Study of Physiology
2 a.h.
Continuation of 72/141; unified student process particularly strong background.
72/41 will be a prerequisite to 72/142, but otherwise no previous life science required.

72/181 Intermediate Physiology
2 a.h.
Lectures on renal mechanisms, including control of renal function and physical and chemical properties of urine, renal diseases; one lecture and one laboratory per week, consent of instructor.

72/142 Biophysical Physiology
2 a.h.
Lectures and laboratory dealing with principles of physiology and design and imple-
mentation of organ systems and cell types; required of dental students; open to graduate and Honor undergraduate students having prerequisite of year of biology or sophomore level of physics, two years of chemistry and either one semester of bio-
chemistry or consent of instructor; second semester.

72/189 Research in Physiology and Biophysics
1 cr.
For graduate students who are not master's or doctoral candidates of Department of Physiology and Biophysics; prerequisite consent of head of the Department.

72/601 Introduction to Biophysics
2 a.h.
Physiological problems in terms of biophysical relations; such topics as biokinetarics, bio-
chemistry, and flow and diffusion in living systems discussed; seminar-oriented prerequisite.
72/182 Biophysical Physiology
2 a.h.
Emphasis on student-oriented effects of exercise on biological systems; two lectures and one biophysical lecture per week; first semester, alternate years; offered 1972-74.

72/503 Advanced Physiology of Exercise
2 a.h.
Selected student-oriented papers on the effects of exercise on biological systems; laboratory; seminar-oriented; alternate years; second semester, prerequisite 72/601.

72/103 Final Individual Study
1 cr.
Same as above 72/102; discussion of selected topics open to graduate, post-
graduate, and medical students.

72/211 General Physiology
4 a.h.
Lectures, laboratories and conferences, application of physical and cilmical princi-
 partly to descriptive and analytical treatment of biophysical phenomena, and to e.

72/212 Medical Physiology
4 a.h.
Application of biophysical and medical physiology, especially in connection with in-
flammation. 72/211 required. 1 cr.

72/213 Endocrinology for Medical Students
1 a.h.
Same as 50/109 and 60/10; for graduate students; core course in endocrinology; given first half of second semester (eight weeks).

72/35 Advanced Systems Physiology
4 a.h.
Course 72/35 and 72/37 involve detailed interdisciplinary laboratory study of func-
tion of biological systems; each semester, particular areas such as respiration, renal physiology, metabolism or cellular and molecular endocrinology designed for review; prerequisite Biochemistry 99/10 or 99/26. 72/313 and consent of instructor, first semester.

72/35 Advanced Systems Physiology
3 or 4 a.h.
Continuation of 72/35; second semester.

72/351 Advanced Respiratory Physiology
2 or 3 a.h.
Investigation in depth of evidence used to develop principal role of pulmonary phys-
iology; two lectures per week and one three-hour laboratory; prerequisite 72/313 or equivalent and consent of instructor; first semester, alternate years; offered 1972-73.

72/341 Membrane Transport
1 a.h.
Concepts on active transport or related to cell homeostasis or open passive transport and transmembrane physiology; prerequisites: 72/322 and consent of instructor; first semester, alternate years; offered 1972-73.

72/353 Advanced Renal Physiology
3 a.h.
Two-hour laboratory work; prerequisite 72/313 or equivalent and consent of instructor, first semester; alternate years; offered 1972-73.

72/354 Advanced Cardiovascular Physiology
3 a.h.
Lectures, reports and laboratory work; physiological adaptive mechanisms of man and the modern mechanical relations considered in depth; in relation to both general and the specific cardiovascular environment; responses to heat, cold, flight, and high and low pressure studied; visiting lecturers from departments of Anesthesiology and Gas-
pathy considered other influence; prerequisite basic course in cardiovascular physiology and consent of instructor; alternate years; offered 1972-73.

72/355 Advanced Neurophysiology
3 a.h.
Recent developments; open to graduate and postgraduate students with prerequi-
rise in brain, more especially concerned with nervous and embryonic neuro-
chemical mechanisms and transmission of electrical and chemical changes in neural system; prerequisite: advanced back-
his work. 72/355 is open to A. 1972-74.

72/356 Advanced Microcirculatory Physiology
3 a.h.
Course on microcirculation; open to graduate students with prerequisite 72/355.

72/357 Advanced Neuroendocrinology
2 a.h.
Course on pineal and hypothalamus physiology; open to graduate students with prerequisite 72/355.

72/358 Advanced Metabolic Physiology
2 a.h.
Recent developments; open to graduate and postgraduate students with prerequi-
rise in metabolic systems.

72/359 Advanced Metabolic Physiology
2 a.h.
Recent developments; open to graduate and postgraduate students with prerequi-
rise in metabolic systems.

72/360 Advanced Neuroendocrinology
1 a.h.
Course on pineal and hypothalamus physiology; open to graduate students with prerequisite 72/355.

72/361 Research Physiology
2 cr.

72/362 Research Physiology
2 cr.

72/363 Research Physiology
2 cr.

72/364 Research Physiology
2 cr.

72/365 Research Physiology
2 cr.

72/366 Research Physiology
2 cr.

72/367 Research Physiology
2 cr.

72/368 Research Physiology
2 cr.

72/369 Research Physiology
2 cr.

72/370 Research Physiology
2 cr.

72/371 Research Physiology
2 cr.

72/372 Research Physiology
2 cr.

72/373 Research Physiology
2 cr.

72/374 Research Physiology
2 cr.

72/375 Research Physiology
2 cr.

72/376 Research Physiology
2 cr.

72/377 Research Physiology
2 cr.

72/378 Research Physiology
2 cr.

72/379 Research Physiology
2 cr.

72/380 Research Physiology
2 cr.

72/381 Research Physiology
2 cr.

72/382 Research Physiology
2 cr.

72/383 Research Physiology
2 cr.

72/384 Research Physiology
2 cr.
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 precursors, 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 of groups of individuals.

The teaching of preventive medicine and environmental health at Iowa began in 1923, 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, toxicology and health administration. Many graduates of the Department have gone on to national and international achievement in public health work.

In 1935 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 transmitted 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 Care System, Service Health and the Department of Civil Engineering.

The Department has traditionally offered degrees at the master's and professional levels with emphases in preventive medicine, environmental and occupational health. The Department is presently (1971-1972) 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.

M.A. and Ph.D. programs are offered. The faculty includes members of the following departments: Pediatrics, Pathology, Preventive Medicine, Environmental Health, Community Medicine, Physical Therapy, and Dentistry. The faculty is actively engaged in research and teaching in the fields of environmental and occupational health, preventive medicine, and public health medicine.

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Courses

03:101 Health Science I
2 cr. 3 or 4 S.H. Section 1—Health-related concepts: human health to systems and evaluation of physical, social and cultural environment; diseases of man and their analysis; three semester hours, Section 2—Health Care Systems: historical and current approach to delivery of health care; prospects for future health care delivery system; two semester hours

03:102 Health Science II
2 cr. 3 or 4 S.H. Section 1—Environmental Health: Fundamentals of social, cultural and physical environment; environment assessment; three semester hours, Section 2—Environmental Management: health law and regulation; organizations engaged in environment management; economic and administrative processes associated with management of environment; two semester hours

03:153 Public Health Aspects of Food and Housing
2 cr. 3 S.H. Section 1—Nutritional aspects of food and food production and processing: acquaintance with laboratory procedures and field training techniques; open to seniors and graduate students (co-requiste)

03:140 Medical Parasitology
3 S.H. Section 1—Medical parasitology; review of public health importance; their life cycles, intermediate hosts; diagnosis of prevention and treatment; lectures, demonstrations, conferences and laboratory; 10 credits.

03:161 Biostatistics
3 or 6 S.H. Elementary course in statistical methods; primarily for students engaged in research in medical and related subjects, may be taken by qualified individuals interested in research in biological fields; same as Statistics 325.101

03:191 Statistical Methods in the Biomedical Sciences
3 cr. Biostatistical methods and concepts particularly appropriate for biomedical research; topics include: descriptive methods, elementary probability, distributions, populations and samples; methods for estimating percentage data and paired and unpaired experimental design; uses and limitations in clinical trials and epidemiology; some illustrations of computerized analysis

03:190 Environmental Health
3 cr. Methods of assessing the environment, pollution of water, air, food and soil; emphasis on local, state, national and international health hazards

03:503 Research: Preventive Medicine and Environmental Health
2 cr. 3 or 6 S.H.

03:510 Seminar
1 cr.

03:530 Thesis
1 st. cr.
comprehensive evaluation of the diagnosis, ideology, natural his-
tory and treatment of the various psychiatric diseases.

To accomplish this, the Department participates in the neu-
robiology course and presents a course in the preclinical years
which is concerned with clinical diagnosis. In the junior
year there is a six-week clerkship on the psychiatric wards
and outpatient clinic directly under the supervision of the Department or
affiliated with it.

The Department also functions as an Accredited Residency
Program in Psychiatry which can lead to certification. This
three-year residency provides extensive experience in inpatient
psychiatry, outpatient psychiatry and child psychiatry.

Among the unique characteristics of the Department is its
ability to be flexible in offering clerkships, externships and re-
search opportunities to medical students. This flexibility is also
characteristic of the residency program, in that a resident may
choose from a number of clinical areas and may spend a consid-
erable amount of time in original research.

The basic science areas of neurochemistry, cytogenetics,
electrophysiology and electrolytology are well represented in the
Department, offering both the medical student and the resi-
dent an opportunity to profit from association with faculty work-
ing in these fields.

Psychology also runs a large program concerned with behav-
ior therapy, group therapy and experimental problems.

The major teaching areas are the wards, clinics and labora-
itories of the Iowa Psychopathic Hospital, the psychiatry area
of the Veterans Administration Hospital and such diverse places
as the Iowa City Mental Health Center, the General Hospital
of The University of Iowa and the Mental Health Institute in
Independence.

Staff: professors Casteel, Cleary, Comly, Gel, Knott, Muirhead,
Norton, Winfield, professors emeriti Lasson, Jenkins, associate
professors Finn, Glascott, Nelson, Noyes, assistant professors Bit-
tle, Debell, Halmi, Loney, Lorenz, Millard, Morris, Penning-
grahl, Rawlings, Kelly, Tanna, Travis, Wurster, instructors Ben-
tner, Crowe, Ehrenhalt, Ordone, Seidgrass, Vornbrock, clini-
cal professor Sands; clinical associates professors Bennett, Brown,
Kennedy, Lorenz; clinical instructors Ambler, Barton, Bealke, 
Moore *.

Courses

75:06 Clinical Psychiatry for Junior Medical Student 6 a.h.

75:105 Methods in Clinical Psychology 3 a.h.

75:108 Research in Psychiatry 3 a.h. (may be taken as independent unit)

75:207 Seminar: Biological of Behavior 2 a.h.

75:221 Neurophysiology 2 a.h.

75:231 Neurophysiology 2 a.h.

75:233 Research in Psychiatry 3 a.h.

Radiation Biology

Department Head THOMAS C. EVANS

Degree offered M.S., Ph.D.

Radiation biology is the study of the properties and biological
effects of radiotopes and ionizing radiations, such as X-rays,
and the use of these radiations as tools in the study of living
processes. The field comprises parts of several disciplines, among
these biology, physics and chemistry.

Undergraduate Courses

Two courses, 77:103 Introductory Radiation Biology and 77:106
Radiological Safety and Health Physics, are open to undergradu-
ate students and should be of interest to those who plan to enter
medicine, nuclear medical technology, environmental health or
similar programs.

Graduate Programs

The M.S. degree in radiation biology is usually taken by students
who plan to stop their training, at least temporarily, to take
employment at a technical level. The program is utilized by
students who later complete work for the Ph.D. in a related field.

The Ph.D. program in radiation biology is open to graduate
students with a background of study in physics, chemistry,
mathematics, biology, health sciences, veterinary medicine or
engineering. Students completing this program find professional
appointments in departments of radiology or nuclear medicine,
or in cancer research centers.

After the student has completed the introductory course he
or she may elect to emphasize one or more aspects of radiation
biology. The details of his or her program are built around
previous training, interests, abilities and career objectives.

Some students elect to emphasize training in physical aspects,
such as radiological physics or health physics. Others major in
biological aspects. In either case a broad base rather than special-
ization is the goal.

The properly-progared student will have had several courses
in biology, chemistry, physics and mathematics before starting a
graduate program. In addition he or she should have a reading
knowledge of scientific French or German, and should have
competence in statistics or computer programming before com-
pleting the Ph.D. program.

In addition to formal courses, the program involves small-
group conferences and discussions. Laboratory exercises are em-
phasized, and the student has an opportunity to become
acquainted with many types of instruments and techniques.

Students will have at least one semester of experience as teach-
ing assistants, and at least one as research assistants. A limited
number of paid assistantships and fellowships are available.
Special Facilities

The Research Radiation Laboratory has several X-ray generators and a small neutron generator. Students and staff members also have access to other radiation sources, such as the Co gamma source in the Department of Radiology and the reactor of the Biology Division at Argonne National Laboratory.

The Radiation Research Laboratory has a variety of radiation detectors and counters, including liquid scintillation counters and a small animal whole-body counter, and it has access to the human whole-body counter at the Iowa City Veterans Administration Hospital.

The laboratory also has an electron spin resonance spectrometer, an ultraviolet spectrophotometer, an automatic cell counter and particle size, an electron microscope and shadow catcher, and facilities for preparing histological sections of tissues—fixed or frozen—and autoradiographs.

Three air-conditioned rooms provide convenient housing for the small laboratory animals used in research and teaching.

Special Faculty Strengths

The faculty has had many years of teaching and research experience in radiation biology. All are members of the Radiation Research Society and a number are members of such societies as the International Association for Radiation Research, American Roentgen Ray Society, Radiological Society of North America, Society of Nuclear Medicine (of which one faculty member was president) and Health Physics Society.

The laboratory has been the office of the managing editor of Radiation Research since the inception of the Radiation Research Society.

Staff members have served on executive boards and advisory committees of the American Cancer Society, the National Council Radiation Protection and Measurements, and state and University radiation protection programs.

Some faculty also participate in the Visiting Radiation Biologist Program of the American Institute of Biological Sciences.

Faculty members have authored or co-authored numerous papers and chapters of books dealing with radiological effects, uses of radiocarbons, and cancer research and therapy.

Staff: professors Evans, Osborne, Riley, Jackson; associate professors Chang, DeGraw; assistant professors Coop, Sorey; post doctoral fellow Sharp

Courses

77/101 Introductory Radiation Biology 4 a.h.
Characteristics and biological effects of ionizing radiation, properties and uses of radiation; the development and use of the biological basis for protective procedures; laboratory procedures experience in use of radiation detectors, measuring devices, radiological techniques; demonstrations of radiation effects; permission of instructor.

77/108 Environmental and Radiological Health Physics 3 a.h.
Lectures, discussions, laboratory exercises: radiation hazards, control regulations, problems of design and use of radiation facilities in medical, academic and industrial situations; standard and emergency procedures for controlling radiation hazards; exposure and dose measurements in radiation environments; preparation for the board of physics or chemistry and consent of instructor.

77/297 Seminar 1 a.h.

77/211 Physics of Radiobiology 4 a.h.
Lectures and laboratory exercises: characteristics of X-ray machines, nuclear emitters and teletherapy devices, properties of X-rays and gamma rays and their interaction with matter; measurement of radiation exposure and depth dose using ionization chambers, ion chamber calibrations, U. S. federal code; radiobiological target theory and survival curves; principles of physics and elements of biostatistics.

77/310 Physiology of Radiation Biology 4 a.h.
Lectures, laboratory, theoretical medicine, production and properties of radiation, treatment of mechanical fluctuations in radiative death, radiation sickness and its alleviation and alleviations of radiation, useful as advanced course in radiobiology and cephalon applied to radiation studies; prerequisite: eight semester hours of physics and consent of instructor.

77/330 Radiation Radiography 4 a.h.
Lectures and laboratory: influence of radiations on cell growth, multiplication, differentiation and function; mechanism of radiation effects by alteration of radiation or environmental factors; effects in cellular aspects of immunology; cell kinetics of tumor and host tissue in relation to radiation; permission 77/310 or consent of instructor.

77/331 Radiobiology in Biological Research 4 a.h.
Further development of radiation radiology portion of 77/330; lectures and laboratory exercises on use of x-rays in biology and medicine as a diagnostic and therapeutic tool; laboratory work: in vitro clonal radiobiological studies, in vivo clonal and non-clonal studies; consent of instructor.

77/332 Radiobiology in Clinical Investigation 4 a.h.
Lectures and laboratory exercises dealing with procurement and uses of radiographic techniques (including X-ray, CT, N-M, S-300, 5-A-19, P-19, N-140, N-42 and labeled compounds) in clinical investigation; prerequisite: 77/310 or consent of instructor.

77/333 Research in Radiobiology 4 a.h.

77/335 Research in Radiological Physics 4 a.h.

77/337 Special Topics 4 a.h.

77/338 Special Topics 4 a.h.

77/339 Thesis 4 a.h.

77/340 Thesis 4 a.h.

Radiology

Department Head: James H. Christie

The Radiology Department's teaching program is designed to train the radiologic needs of student medical students in diagnostic radiology, nuclear medicine and radiation therapy.

Group size is limited to less than eight students per instructor to permit efficient accumulation of basic radiologic information during the two-week courses.

In addition to a general introductory course, rotations through the various subspecialties of "radiology—pneumonocardiogam,

pneumonocardiograph, head and neck radiology, roentgenology, medicine, etc.—are offered in the form of elective clerkships. The duration of these rotations through the various subspecialties is adjusted to the individual student's interests.

Staff: professors Christie, Cornell, Evans, Jackson, Latourette, Osborne, Petterson, Riley, professors Emery, Cullin, Kerr, associate professors Chang, Cullin, Dolen; assistant professors Brown, Tapan K. Chaudhuri, Tutkin K. Chaudhuri, Guthrie, Lenora, Sandrock, Schapiro, Sorey; instructors Eberhardt, Internist; associates Chin, Go, Hahn, Rice, fellow Sukriski
Courses

76401 Introduction to Radiology 1 a.h.
Basic concepts in radiologic diagnosis of chest, abdominal and bone diseases; nature of radiologic techniques; sites and techniques of radiation therapy; an-
nelar radiologic examination; six weeks, offered September through July

76402 Clinical Radiology 2 a.h.
Physical examination through skin and mucous membrane; interpretation of radiologic examination of chest, abdomen, spine, extremities and other
organ systems; two students per subcommittee; examination in radiologic techniques in one of the subcommittees; assessment of films weekly; subscription
one time; two weeks, offered September through July

76403 Pediatric Radiology 6 a.h.
Interpretation of radiologic examinations of pediatric patients; joint conferences with pediatricians and pediatric surgeons; one student; prerequisite: Introduction to Radiology; subscription time; two weeks; offered September through July

76404 Angiography 3 a.h.
Clinical indications, techniques and interpretations of abdominal and extremity angiographic procedures; one student; prerequisite: Introduction to Radiology; subscription time; one week; offered September through July

76405 Neuroradiology 3 a.h.
Clinical indications, techniques and interpretation of neuroradiologic and cerebral angiographic procedures; one student; prerequisite: Introduction to Radiology; subscription time; two weeks; offered September through July

76406 Nutrition Therapy 3 a.h.
Nutrition therapy and nutrition therapy principles, techniques, objectives; two students; subscription time; two weeks; offered September through July

76407 Nuclear Medicine 3 a.h.
Clinical applications of nuclear medicine, scanning theory and techniques of diagnosis; examination in nuclear medicine and interpretation of nuclear images; two
weeks, offered September through July

Surgery

Chairman: Bishop S. Ziffren
Vice-Chairman: Lawrence Neldusten
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 treatment of disease. Emphasis is placed upon basic emergency techniques; trauma surgery; on-
cology; burns; gynecologic surgery and linear tract disease; endo-
docrine disease, particularly of the breasts; transplantation; thoracic-cardiovascular conditions; and neurosurgery.

A majority of the courses involve patient-oriented discussions and practical exercises intermixed with operating room experiences. However, there are lectures and conferences on specific topics.

Special programs in selected topics of surgical research, in-
dependent 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 designed 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 intensively directed training in surgical problems either in the clinic or the laboratories. The program is designed primarily for surgical resi-
dents who plan a career in academic surgery; it is available only to medical students and to qualified individual students in as-
sociated health sciences.

The content of the master's degree, both with regard 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 re-
search
Thesis—Formal, publishable, defended in oral exam

Facilities

The Department's Belzer Unit provides a unique opportunity to investigate problems involved in the preservation of organs har-
ested 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 Burn 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 pathophysi-
ology and problems of severe burns, the surgical control of morbid obesity, inflammatory bowel disease, the pathophysi-
ology of biliary tract disease and pediatric surgery. The thoracic-cardiovascular and neurologic surgeons have particu-
lar expertise in the clinical management of the spectrum of dis-
cases 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.

Staff: professors Commen, DeBostan, Ehrenhauser, Gref, Lawton, Mason, Ferrer, Kuntz, Soper, Ziffren; clinical professors Palmirno, Warkins; associate professors Gulezian, Harthard, Pirietz; clinical associates professors Dragstedt, Lalou, Sharp, Sothern; as-
sistent professors Baker, Barnes, Doby, McDonnell, Okawara, Taube, Zier; visiting assistant professor Parotins

Courses

761 Basic Emergency Techniques 1 a.h.
Six-week basic course in emergency medical techniques, emphasis on presci-
cular treatment and administration of certain materiae

56111 Introduction to Clinical Medicine
Multihospitalized course designed to prepare medical student for junior clerkship; sequence of medical and clinical experiences centering on recognition and treatment of common diseases encountered during the clerkship

765 Clinical-Surgical Clerkship 6 a.h.
Six-week course in clinical surgery, limited to junior medical students

76107 Neurology-Neurosurgery Conference 1 a.h.
narr

76130 Principles of Surgery
Lectured under Physical Therapy
Urology

7:303 Surgical Audit
or. arr. Weekly review of mortality and morbidity on surgical service; preoperative joint meeting
7:305 Breast Clinic and Conference
or. arr. Diagnostic/treatment of patients with breast complaints
7:307 Tumor Clinic
or. arr. Diagnostic/treatment in Iowa City Veterans Administration–Hospital ward
7:308 Review of Anatomical Neurology
or. arr. Important elements of neural nervous system; emphasis on functional relationship; offered only upon sufficient demand
7:309 Translational Conference
or. arr. Review of interesting vascular cases from both Veterans Administration and University
7:311 Surgical Pathology
or. arr. Dissection by original pathology faculty concerning patients of medical interest
7:315 Obstetric Clinical Experience
2-3 h. Students assess advanced responsibility for patient care on wards and in operating rooms on one surgical service; evaluate based on knowledge and laboratory in dealing with patient problems; prerequisite: Surgery 7:3 and consent of instructor; two to four weeks
7:317 Advanced Surgical Embarkation
or. arr. Advanced one-on-one experience in outside teaching centers; prerequisite: Surgery 7:3 and consent of instructor
7:319 Surgical Oncology
2-4 h. Intensive experience in diagnosis and operative management of tumors; student expected to assess chemotherapy including indications and pati:itive technique; student attends breast and lymphoma conferences; evaluation based on performance on Oncology Service; prerequisite: Surgery 7:3 and consent of instructor; two to four weeks; two students
7:321 Clinical Research and Oncology
or. arr. Investigation of clinical problems related to neoplastic diseases; project submitted in publishable manuscript; evaluations and junior nurses encouraged in ongoing projects; seniors limited to retrospective reviews; prerequisite consent of instructor
7:322 Neurosurgery Conference
3 h. Weekly conference in which emergency and neurosurgery faculty reviews cases
7:323 Pneum-Therapy Seminar
2-3 h. Students present reports of case results on ward and in operating room; experience emphasis on ward and field and electrotherapy; evaluation based on performance; prerequisite: Surgery 7:3 and consent of instructor; two to four weeks
7:324 Internal Medicine
3-4 h. Designed for interest in internal medicine; elective course; offering opportunity to become familiar with general medicine and surgery; evaluation based on performance; prerequisite: Surgery 7:3 and consent of instructor; two to four weeks; one student
7:325 Anesthesia
2-4 h. Anesthesiology conferences on real anesthetic cases; considerations exposed to coordinated aspects of interdepartmental discipline (anesthesia, radiology, surgery, pathology, pathology, and so on); selection and attendance at required conferences with evidence and anesthesia exposed evaluation based on performance; prerequisite: Surgery 7:3 and consent of instructor; four week minimum; one student
7:326 Emergency Rooms
or. arr. Preparedness with history and faculty in which principles of acute medicine are emphasized; evaluation based on performance in emergency rooms; prerequisite: Surgery 7:3 and consent of instructor; two students
7:328 Special Surgery
or. arr. Students research, plan and organize project with member of surgical faculty; student expected to present project at end of clerkship or for project; see Departmental clerk for enrollment prereq: consent of instructor
7:329 Plastic Surgery
or. arr. Students interested in vascular, cardiac, or thoracic surgery; attendance at all-semester conferences of Division; students spends maximum time on service exposed to assume intensive responsibilities and complete short-term research project; prerequisite: Surgery 7:3 and consent of instructor; two students
7:332 Research in Cardiovascular Surgery
or. arr. Short- or long-term research project arranged with instructor; may involve clinical material or laboratory; organization and completion of publishable material; prerequisite: consent of instructor
7:334 Surgical Embarkment at the Veterans Administration Hospital, Des Moines
or. arr. Conferences on general, thoracic or vascular surgery; participants is conferences, ward work, operating room and research laboratory; evaluation to examination; hours, hours, and hours of patient contact; prerequisite: Surgery 7:3 and consent of instructor; two to eight weeks; three students

Urology

Modern urology is concerned with diseases of the entire urinary tract of the male and female and with the male genitourinary. It includes urological nephrology, urology, urology endocrinology, and the broad area of pelvic urology in addition to the areas of general urology, such as urinary tract stones, urinary tract infections, diagnostic urology and the results of urinary tract obstruction.

The Department offers courses in all these fields, at the undergraduate and graduate levels and in continuing education for the delivery of urologic care.

In the first year of the medicine, the Department participates with several of the basic science departments in cooperative endeavors to teach the relationship of urology to the basic sciences. This is especially true in anatomy and pathology. In immunology, as it relates to transplantation and to cancer, the Department participates actively with the Department of Microbiology.

The Department participates very actively in introduction to Medicine, which involves the entire second semester of second-year medicine. The Department offers courses calculated to illustrate the diagnosis and treatment of diseases involving the genitourinary tract in the male and the urinary tract in the female and child.

In the third and fourth years of the curriculum in medicine, the Department offers courses in diagnostic urology, radiologic urology, urologic oncology and the entire field of urology. In the required third-year clerkship, the Department offers the basic of this material, and in the fourth year it offers advanced elective courses of intensive study in these areas.

Continuing education is offered throughout the year for urology and family practitioners.

These activities are conducted by a well-trained staff seasoned in the various areas, whose members have intense interest in certain sites, including pediatric urology, reproductive physiology, urologic oncology and prostatic diseases.

A special area, in which the Department has earned international recognition, has been created for the study of prostatic diseases.

The urologic laboratories are active and offer instruction in various areas of research in the areas of urology. Special courses in these areas are available on an rostive basis.

Staff: professors Bunge, Culp, Flockie, associate professors Haverhey, Schmidt, assistant professors Bonney
Courses

78:104 Clinical-Urology Junior Medical-Student Clerkship 2 s.h.
Provides intense 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 exposed to clinical and diagnostic urology through visits to Urology Department and its operating rooms, urologic clinic and patient care areas; includes case reviews and topic in urology covered daily by senior staff personnel.

79:106 Urology 3-way Interpretation 1 s.h.
Many days throughout year to review radiographs; provides wide experience in urographic radiology; culminates in weekly urology-radiology conference, which students expected to attend; conferences guided by Radiology and Urology staff.

79:106 Urology Grand Rounds 1 s.h.
Weekly conference of Urology Department; increasing surgical clinical cases of work discussed in detail, with presentations in didactic lecture form of associated literature and management problems; review of selected urologic material demonstrated.

79:107 Urology Seminar 1 s.h.
Weekly review of selected material by senior staff in didactic lecture; discussion of resident and student patients; case history review and radiographic interpretation provide significant addition to seminar; research review and the presentation of papers of senior staff and resident personnel reviewed.

79:108 Advanced Clerkship 4 s.h.
Students become integral member of urologic staff; spend full time in Department for four weeks assigned to supervising resident; senior direction of junior and senior staff; responsibility for obtaining history, performing physical examination, conducting diagnostic evaluations and following therapeutic manipulations of uroscopists, urologist for each patient; interpreting history in terms of pathologic lesion; significance of the laboratory, urographic and instrumental examinations; reasons for choice of therapy; lessons learned in managing case; and examination based upon student's experience conducted by senior urologic staff at conclusion of clerkship.

79:109 Rotations in Urology 1 s.h.
Responsible for providing broad experience in different years, pathologic and clinical aspects of urologic disease; in addition, resident is assigned to attend conferences, which include topics in radiology, urology, surgery and pathology of urologic disease, and these conferences in subjects discussed conducted at end of each 13-week period.

79:609 Special Studies 1-2 s.h.
Individual supervised clinical project conducted by class member and faculty representative of urologic senior staff; paper presented at Departmental meetings; written examination to be held at conclusion of project; thesis prepared followed by oral examination.

79:111 Urology 4 s.h.
Full time in departments of Urology and Radiology, where indications, contraindications, complications and techniques of urologic procedures, especially those that are urologic, are observed and discussed; includes urologic research problems; preparation of written discussion of urologic material and during period of study, with particular emphasis placed upon correlation of pathologic and clinical findings; practical examination of microscopic and gross specimens as well as written examination.

79:120 Grand Rounds (Urology) 1 s.h.
Weekly. Each week on Department of Urology covers one or two occasions to discuss urologic disease; students other than junior residents assigned to service may attend and participate; residents may receive credit for course; students must attend 40 such conferences and prepare written report summarizing topics discussed, with detailed discussions of five topics.

79:114 Prostatic Disease 4 s.h.
Research and clinical study of prostatic disease; arrangements made to provide experiences in Department's ongoing research in carcinoma of prostate; special related program of individual interest may be arranged; clinical material with prostatic disease assigned as available; at conclusion of period, thesis prepared covering research activity; written examination covering clinical experience.

79:115 Urological Oncology 4 s.h.
In-depth clinical experience in diagnosis and management of all types of genitourinary neoplasms; acquisition of understanding of general principles in differential diagnosis and surgical, radiation and chemotherapy modalities utilized in care of genitourinary cancer; participation in Department's ongoing research in prostatic carcinoma experimental; at conclusion of course, thesis prepared on some aspect of one of these topics, written examination.

79:116 Endoscopy and Endoresection 2 s.h.
Acquaintance with current status of male endoresection and laboratory methods of assessing seminal vesicle, urethras, assessment and management of clinical problems, diagnosis and management of genitourinary disease; clinical and laboratory management of potential factors, such as tests of sex hormones, management of clinical cases based on these tests; thesis prepared on topic of interest covered in course.

79:117 Transplantation Senior Clerkship 8 s.h.
Collaboration between residents, general surgery, pediatrics, and urology, providing introduction to general and immunology of transplantation course has clinical problem assigned, such as evaluation of potential patients, management of clinical cases, management of clinical cases, from point of time, thesis prepared on topic of interest.

79:120 Coronary Care Unit Clerkship 8 s.h.
Collaboration between medical, general surgery, pediatrics, and urology, providing introduction to general and immunology of transplantation course has clinical problem assigned, such as evaluation of potential patients, management of clinical cases, management of clinical cases, from point of time, thesis prepared on topic of interest.

78:112 Urology 8 s.h.
Participation in Urology and Pathology departments in study of postmortem examination and surgical procedures; additional study of selected pathologic material with gross and microscopic; provided gross tissue material, description of histologic techniques; provides preparation of written discussion of pathologic material held during period of study, with particular emphasis placed upon correlation of pathologic and clinical findings; practical examination of microscopic and gross specimens as well as written examination.
College of Nursing

Administrative Staff
Dean: Evelyn R. Barritt
Assistant Dean, Graduate Programs: Elie Rasmussen
Assistant Dean, Undergraduate Program: Stewart Frei
Comptroller, Articulation Project: Adrian Binhovenasser
Director, Continuing Education: Paul Zemlicka
Degrees offered: B.S., M.A.

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 at University level 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, governmental 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, maternal 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 prescribed sequence of general education and science courses;
- By transferring from another college with advance 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; Arizona State University; University of Northern Iowa; Cedar Falls; Iowa Central Community College, Fort Dodge; North Iowa Community College; Mankato State University; Marshalltown Community College; Marshalltown; Muscatine Community College, Muscatine; Upper Iowa College, Fayette; Brie's College, Sioux City; Morning-side 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 Aid
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 appear to be 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 enrollments. 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 may 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 Requirements

Graduate students in 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 individually 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 evaluated 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 18 semester hours, and must be approved by the dean and adviser. 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 other majors for nonthesis students. A written examination is required of all degree candidates.

Financial Aid

The College of Nursing participates in the Professional Nursing Traineeship 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. Forms may be obtained from the Graduate Program Office, College of Nursing, The University of Iowa.

Degree Requirements

Medical-Surgical Nursing—33 semester hours

96:322-234 Advanced Medical-Surgical Nursing 8 s.h.
92:120 Research Methodology 3 s.h.
96:220 Research in Nursing 2 s.h.
96:299 Thesis 6 s.h.
95:202 Statistics 3 s.h.
Electives from one related area (physiological or behavioral sciences) 8 s.h.

Nursing of Children—33 semester hours

96:242-244 Advanced Nursing of Children 14 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.
Electives (from relevant area) 11 s.h.
Thesis 6 s.h.
(Graduate course in statistics required prior to admission or in fall semester)
Psychiatric Nursing—32 semester hours

96.232-235 Advanced Psychiatric Nursing 18 s.h. 14 s.h.

96.230 Introduction to Methods of Nursing Research 1 s.h. 3 s.h.

96.220 Research in Nursing 3 s.h.

96.218 Perspectives in Nursing 2 s.h.

96.216 Electives from a related field 7 s.h.

96.210 Thesis 0 s.h. 6 s.h.

(Elementary course in statistics required prior to admission or in first semester)

Nursing Service Administration—32 semester hours

96.252-256 Nursing Service Administration 13 s.h.

96.254-258 Clinical Nursing 6 s.h.

96.250 Introduction to Methods of Nursing Research 3 s.h.

96.240 Research in Nursing 2 s.h.

96.248 Perspectives in Nursing 2 s.h.

96.246 Electives 6 s.h.

(Elementary 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 nurses 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: Professors Aydelotte, Barrett; professor emeritus Benz; associate professors Erikson, Gondron, Yeager, Lawrence, Lyford, Overland, Rasmussen, Thomas, Triplett, Shafford, Solomon, Whitcomb; assistant professors Austin, Baldwin, Buhman, Balchuk, Bullard, Busse, Crowell, Douglas, Elder, Franck, Fretz, Ghez, Kerfoot, Lakin, McClelland, Maher, Moore, Molen, Ostrowski, Price, Rodk, Russell, Schaff, Schaff, Smith, Selvemacher, Steers, Voth, Zamora; instructors Albrecht, Carlson, Denhoy, Dornett, Greenwood, Hull, McGurk, Miller, Montgomery, Murlis, Powell, Sbro, Scandrett, Schnee, Sweeney; associate instructors Berg, Bodt, Hay, Habenstein, Jastak, Swanson, Vincent, Fuller

Undergraduate Courses

96.256 Foundations of Nursing 5 s.h.

Nursing process, including concepts of observation, communication, health and basic nursing skills. Anatomical and physiological principles should be taken prior to or concurrently with 96.24 and 96.25.

96.258 Psychiatric Foundations of Nursing 2 s.h.

Laboratory, discussion and selected nursing practice experiences; 96.24 and 96.25 must be taken concurrently.

96.258 Foundations of Nursing 2 s.h.

Selected nursing care concepts of professional nursing responsibility, leadership and decision; prerequisites 96.24, 96.25, 60.1 and 75.11.

96.257 Psychiatric Foundations of Nursing 2 s.h.

Laboratory, discussion and selected nursing practice experiences; 96.24 and 96.25 must be taken concurrently.

96.258 Foundations of Nursing 4 s.h.

Nursing process, including concepts of observation, communication, health and professional nursing responsibility, basic nursing skills and selected nursing care procedures, lectures and discussion; open to College of Nursing for prerequisites.

96.259 Psychiatric Foundations of Nursing 2 s.h.

Laboratory, discussion and selected nursing practice experiences; 96.24 and 96.25 must be taken concurrently.

96.260 Human Development Behavior 4 s.h.

Developmental aspects of human organism from conception through adulthood, physiological, emotional and social factors; open to freshmen with consent of instructor.

96.261 Medical-Surgical Nursing 5 s.h.

Focus on underlying mechanisms of normal body function and effects upon health and disease. Study of the effects of acute and chronic illness on the patient; relates factors affecting patient's response to illness or therapies utilized; nursing problems related and nursing actions appropriate to the patient's response.

96.267 Psychiatric-Mental Nursing 5 s.h.

Guidelines in application of 96.26 in care of acute and chronic mental and surgically altered patients; principles of care and teaching.

96.268 Nursing of Adults and Children 5 s.h.

Physiological and behavioral sciences, mental health, public health perspectives and selected teaching and nursing care skills; selected case studies.

96.266 Psychiatric Nursing of Adults and Children 5 s.h.

Application of nursing principles to care of adults and children; evaluation of nursing skills obtained through previous study in diploma or associate degree programs, registered nurse students.

96.269 Maternal Nursing 3 s.h.

Principles of pregnancy and newborn care; principles of care and teaching.

96.264 Maternity Nursing 5 s.h.

Application of nursing principles to care of mothers and infants during antepartum, intrapartum and postpartum periods; principles of care and teaching.

96.268 Nursing Care of Children 5 s.h.

Principles of caring for children in promoting health, preventing illness and caring for hospitalised children; consideration of effects of illness and treatments on child; life or death developmental level and family unit; principles of care and teaching.

96.265 Psychiatric Nursing of Children 5 s.h.

Application of nursing principles to care of children; principles of care and teaching.

96.266 Psychiatric Nursing of Children 5 s.h.

Self-understanding, psychopathology and problems associated with mental illness; understanding of psychiatric-mental health concepts and principles in prevention and therapy.

96.267 Psychiatric-Mental Nursing 5 s.h.

Application of theory of psychiatric nursing and related theories in care of mentally ill persons; emphasis on developing communication skills and interpersonal approach to patient care.

96.268 Family and Community Health Nursing 5 s.h.

Concepts and skills of faculty and community supervision; open to seniors in undergraduate program and others with permission of instructor.

96.269 Psychiatric Family and Community Health Nursing 5 s.h.

Application of skills and faculty of community supervision open to senior in undergraduate program and others with permission of instructor.

96.264 Nursing in the Social Order 2 s.h.

Philosophical and historical basis of nursing; implications of social change for nursing education and practice; principles of care and teaching.

96.265 Nursing in Senior Care 2 s.h.

Application of knowledge and skills to patient needs and nursing problems in selected situations; emphasis on management principles in organization of patient care; prerequisites senior standing.

96.266 Psychiatric Nursing in Senior Care 2 s.h.

Opportunity to see results of clinical analysis of patient needs and nursing problems in nursing situations; open to seniors in undergraduate program; principles of management principles in organization of patient care; prerequisite senior standing.

96.267 Psychiatric-Mental Nursing in Senior Care 2 s.h.

Supervised study of type clinical practice adjacent to needs of student.

Graduate Courses

96.260 Introduction to Methods of Research 3 s.h.

Development of scientific approach to knowledge and problem solving; relationship among facts, research and theory; emphasis on specific research approach, methods of data collection and analysis of measurement; development of research knowledge and skills.

96.268 Seminar: Perspectives in Nursing 2 s.h.

Identification and exploration of contemporary issues and trends in nursing.
Nursing Research 2 a.h.
Analysis and critical appraisal of nursing theories and nursing research; communication of research findings; completion of research proposal; pre-registration 96:250, dissertation 96:251.

Advanced Medical-Surgical Nursing I 4 a.h.
Contemporary research in natural, behavioral and applied sciences for definition and formulation of concepts and principles underlying care for surgical patients. Focus upon critical analysis of major research areas with emphasis on care of medical-surgical patients with provision for clinical experience in hospital setting.

Continuation of 96:252, which is prerequisite 96:253

Advanced Medical-Surgical Nursing II 4 a.h.
Growth and development of child, philosophy of child care, health promotion and consultation; experiences with well children in variety of settings provided.

Advanced Nursing of Children II 4 a.h.
Children's response to illness and hospitalization, care of ill child in a variety of settings, role of the nurse in facilitating optimum health care for children; prerequisite: 96:242.

Advanced Nursing of Children III 6 a.h.
Individuals' health care in selected clinical or functional areas, investigation of research in selected areas; prerequisite: 96:243.

Advanced Psychiatric Nursing I 3 a.h.
Selected theories of parapsychiatric development and principles and techniques of nursing care in selected areas; prerequisite: 96:234.

Advanced Psychiatric Nursing II 3 a.h.

Supervised practice experiences in providing psychiatric nursing intervention for individuals who have psychiatric-mental health problems and in providing emotional support to families of these patients. Supervised care in general hospital settings; concurrent with: 96:219.

Clinical Practice in Psychiatric Nursing II 3 a.h.
Continuation of psychiatric nursing experience in providing psychiatric nursing intervention for individuals, groups and families, supervised consultation services in nursing personnel of inpatient and in outpatient general hospital settings; concurrent with: 96:231.

Advanced Psychiatric Nursing III 6 a.h.

Clinical Nursing Processes, Concepts and Practice, Contemporary Health Care Trends Influencing Nursing: Clinical case analysis with integrated clinical experiences 96:259

Clinical Nursing II 3 a.h.
Continuation of 96:258; prerequisite: 96:253.

Nursing Service Administration I 3 a.h.
Administrative concepts and organizational theory and practice in selected areas of modern service agencies. Small group discussion using case method of studying nursing administration.

Nursing Service Administration II 3 a.h.
Principles of service administration in complex service agencies with special attention to planning, budgeting, staffing and control.

Nursing Service Administration III 3 a.h.

Supervised in Nursing 3 a.h.
Supervised practice in providing nursing care in a variety of settings 96:269

Thesis 3 a.h.
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 him or her community as a prime source of information on health topics.

Although he or she performs a variety of tasks in and out of 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 pharmacist, numerous others are pharmaceutical salespeople. Pharmacy training is especially valuable to these men and women who are responsible for acquainting physicians, dentists and other health professionals with drug products.

In the United States many 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 the field. As increasing need for pharmacists is 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 colleges of Medicine, Nursing and Dentistry, the College of Pharmacy is an integral part of the University Health Center.

The collegs 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, medicinal chemistry, pharmacognosy (chemistry and actions of drugs derived from plants and other natural sources), administrative pharmacy (pharmacy operations) and institutional pharmacy (clinical pharmacy and hospital pharmacy).

Basic and 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 approved 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 preprofessional 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, pharmacokinetics, 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 necessities are supplied to the General, Children’s and Psychopathic hospitals. Pharmacy students are given laboratory and classroom experience in the clinical pharmacy program, under supervision of clinical instructors and hospital Pharmacy 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 to give 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:** three semester hours 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 nonpharmacy colleges receive credit for work required in the Bachelor of Science curriculum in pharmacy, but are still subject to the licensure requirements 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**

**First Year**

<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td></td>
<td>46:13</td>
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<tr>
<td>Pharmacy: Calculations</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>6:121</td>
<td></td>
<td>3</td>
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<tr>
<td>Organic Chemistry 1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>37:3</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Principles of Animal Biology</td>
<td></td>
<td></td>
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<tr>
<td>4:11</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Quantitative Analysis</td>
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<tr>
<td>Total semester hours</td>
<td>15</td>
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</tr>
<tr>
<td>Second Semester</td>
<td>46:14</td>
<td>Pharmacy: Orientation</td>
</tr>
<tr>
<td>46:16</td>
<td>Pharmaceutical Chemistry: Inorganic</td>
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<tr>
<td>46:12</td>
<td>Organic Chemistry II</td>
<td>3</td>
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<td>41:41</td>
<td>Intermediate Chemistry Laboratory I</td>
<td>2</td>
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<tr>
<td>or 6E:1</td>
<td>Elective</td>
<td>4</td>
</tr>
<tr>
<td>6E:2</td>
<td>Economics</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Total semester hours</td>
<td>17</td>
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| Second Year | 46:23 | Pharmacy: Solids | 3 |
| 99:161 | Biochemistry | 4 |
| 61:157 | Microbiology | 4 |
| | Elective | 3 |
| | Total semester hours | 14 |

| Second Semester | 46:26 | Pharmacy: Institutional Practice | 2 |
| 46:28 | Pharmacy: Solutions | 4 |
| 6A:2 | Accounting | 6 |
| | Elective | 6 |
| | Total semester hours | 15 |

| Third Year | 46:131 | Pharmaceutical Chemistry: Organic | 3 |
| 46:31 | Pharmacy: Polyphasic Systems | 4 |
| 72:151 | Intermediate Mammalian Physiology | 5 |
| | Elective | 3 |
| | Total semester hours | 15 |

| 46:35 | Pharmacognosy | 4 |
| 71:101 | Pharmacology | 5 |
| 46:110 | Clinical Pharmacy: Case Study | 2 |
| | Elective | 3 |
| | Total semester hours | 17 |

| Fourth Year | First Semester | 46:41 | Pharmacognosy | 4 |
| 46:43 | Pharmacy: Professional Practice | 3 |
| 46:45 | Pharmacy: Administrative | 3 |
| 46:113 | Clinical Pharmacy: Laboratory | 3-4 |
| 71:103 | Pharmacology and Toxicology | 3 |
| | Total semester hours | 15-17 |

| Second Semester | 46:64 | Pharmacy: Professional Practice | 3 |
| 46:46 | Pharmacy: Administrative | 3 |
| 46:52 | Pharmacy: Senior Seminar | 3 |
| 46:112 | Clinical Pharmacy: Laboratory | 1-4 |
| 91:130 | Law in a Technological Society | 2 |
| | Elective | 3 |
| | Total semester hours | 14-16 |

| Professional Electives | 46:10 | Pharmacy Projects | 1-3 |
| 46:104 | Pharmacy Biopharmaceutics | 2 |
| 46:106 | Industrial Pharmacy | 3-5 |
| 46:107 | Hospital Pharmacy: Survey | 3 |
| 46:108 | Hospital Pharmacy: Survey | 3 |
| 46:133 | Pharmaceutical Chemistry: Drug Analysis | 3 |

**Undergraduate Pharmacy**

<table>
<thead>
<tr>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>46:144</td>
<td>Medical Calculations</td>
<td>3 s.h.</td>
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<tr>
<td>46:14</td>
<td>Systems of weights and measures used in United States and their relationships; calculation involving specific gravity, percentage, concentration or dilution, dilution and chemical reactions; problems based on such commercial calculations as profit and loss, discount, operating expenses and taxes</td>
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<td>46:14 Pharmacy: Orientation</td>
<td>3 s.h.</td>
<td></td>
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<td>2 s.h.</td>
<td></td>
</tr>
<tr>
<td>46:28 Pharmacy: Solutions</td>
<td>4 s.h.</td>
<td></td>
</tr>
<tr>
<td>6A:2 Accounting</td>
<td>6 s.h.</td>
<td></td>
</tr>
<tr>
<td>6E:2 Economics</td>
<td>4 s.h.</td>
<td></td>
</tr>
<tr>
<td>6E:1 Elective</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>6E:2 Economics</td>
<td>4 s.h.</td>
<td></td>
</tr>
<tr>
<td>6E:1 Elective</td>
<td>3 s.h.</td>
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<td>15 s.h.</td>
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**Graduate Pharmacy**

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<tr>
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<tbody>
<tr>
<td>46:101 Pharmacy: Projects</td>
<td>1 to 3 s.h.</td>
<td>Requires and applies research problems of pharmaceutical significance, one conference and one two-laboratory periods weekly; prerequisites: senior or graduate standing</td>
</tr>
<tr>
<td>46:102 Pharmacy: Physical</td>
<td>2 s.h.</td>
<td>Two lecture hours and one laboratory hour each week</td>
</tr>
<tr>
<td>46:103 Pharmacy: Physical</td>
<td>3 s.h.</td>
<td>Two lecture hours and one laboratory hour each week</td>
</tr>
<tr>
<td>46:104 Pharmacy: Professional</td>
<td>2 s.h.</td>
<td>Requires and applies research problems of pharmaceutical significance, one conference and one two-laboratory periods weekly; prerequisites: senior or graduate standing</td>
</tr>
<tr>
<td>46:105 Pharmacy: Contemporary Research Problems</td>
<td>2 s.h.</td>
<td>Reviews current research problems in pharmaceutical sciences</td>
</tr>
<tr>
<td>46:206 Pharmacy: Safety in Pharmacy Practice</td>
<td>2 s.h.</td>
<td>Requires and applies research problems of pharmaceutical significance, one conference and one two-laboratory periods weekly; prerequisites: senior or graduate standing</td>
</tr>
<tr>
<td>46:306 Pharmacy: Research Methods</td>
<td>3 s.h.</td>
<td>Requires and applies research problems of pharmaceutical significance, one conference and one two-laboratory periods weekly; prerequisites: senior or graduate standing</td>
</tr>
<tr>
<td>46:506 Pharmacy: Research Methods</td>
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The University recognizes that creative activity is an indispensible 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 its regular 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 or 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 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 random 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 S4 having a resolution of 1.30 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 pre- and post-doctoral fellowship awards, as well as application forms when available. A few potential funding agencies is located, staff is available to assist in the preparation of budget and cover materials 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 a diagnostic clinic for developmental problems in children. The Clinic will provide a comprehensive study of 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 Guldeke 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 Preventive Study and Accident Prevention Laboratory are part 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
Research Activities

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. It encourages 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 stereo- logic 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 reprinter series and monograph series. The Center's community surveys are on tape in its data bank and are readily available for secondary analysis 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 tutorial 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.

Neuroreoney Center
The Neuroreoney 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 neuroradiology 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 coordination and visual sensation secondary to disorders of the nervous system. Projects which provide biochemical and medical correlates of disorders of the nervous system are also sponsored.

Radiation Research Laboratory (Radiation Biology)
Effects of sublethal radiation and utilization of radiation 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 science, radiobiology, health physics, radiological physics, cancer research, etc. The Laboratory's introductory course deals with radiation physics, radiation effects and uses of radiocouples. 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 at 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. TSRC 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 various 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 advisor 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 (Latin), Drawing, Economics, Education, English, Geography, History, Home Economics, Journalism, Library Science, Mathematics, Music, Physical Education, Police Science, 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 allowances for subsistence or books and supplies.

Education for Veterans
The Veterans Readjustment Benefit Act of 1966 includes provisions 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 course offerings open to undergraduates, 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 for Women, is currently being developed.

Adult Education Advisory Service
This Service within the College of Education provides consultant 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 Audiorvisual Center of faculty, staff, or graduate assistant also is encouraged. All Audiorvisual 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 nominal fee is charged for off-campus use of these films. Tapes are obtained at a nominal charge for materials and duplication.

Campus Service
Audiorvisual equipment available for use includes film, slides, filmstrips, opaque and overhead projectors; audio tape recorders; record players; portable videotape recorders; portable public address systems; and display devices (exhibits, screens, 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, layouts, posters, illustrations, models, exhibits and overhead transparencies; black and white and color photographs, negatives, microfilms, slides, portraits, microprogrammed slides, color motion photography; motion pictures, videotapes, filmstrips, production scripts, narration and audio tapes. Still photographic and motion picture printing and processing laboratory services are available. Certain 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 cooperative arrangements between the Audiorvisual Center, department, schools, colleges and other service agencies. Currently there is the Medical Audiorvisual Center, Dental Audiorvisual Center, the Educational Media Laboratory and the Music Audiorvisual Center.

Radio Broadcasting Services
WSUI and KUIS-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 programming not available elsewhere. As an affiliate of National Public Radio, WSUI coordinates program materials to a national network of more than 100 noncommercial 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 an interscholastic debate, extemporaneous speaking, original oratory, dramatic interpretation, oral interpretation, news commentary on radio, exposure speaking on television and student senate activities among high schools of the state; assists schools in the collection and distribution of materials from national agencies; and conducts debates and contests.

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 scales 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 established 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 at a special price at a carrying charge above the publishers' price.

Service to Adult Education Groups
The Division seeks to aid state and local associations, organizations 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 provides 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 notebooks 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 630 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 areas.

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 inservice 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 these 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 objective, 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, to 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 Hospital—Care, treatment and maintenance of committed and voluntary patients
State Hygienic Laboratory—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 handicap makes 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. An adequate and thorough initial evaluation and periodic recheck 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 information regarding the care of their child at home. An attempt is made to give attention to all of each child's problems, as far as possible.

The Pine School Section has as its main function educational research, teacher training and community services. 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 Session 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 offices of State 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 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 the age of 18 years.

Diagnostic field clinics are conducted annually in communities throughout the state and on the University's Off-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, phenylketonuria or muscular dystrophy. There 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 Cyclornis. This is a complete representation of a bird island of the Hawaiian group. Other habitat exhibits include The Bering Sea, the Louisiana Swamp, the Nile Migration and Cows 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.

Ethnological 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, enrollment and academic questions, and helps host 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 advisor for both graduate and faculty awards, as well as...
for the International Research and Exchanges Board (IRES). The OIES takes an active interest in promoting cooperation between the various aspects of international studies—foreign language and area programs, comparative studies, foreign language 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 understanding 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 information to mass media, gathers and prepares informative material for special and general interest periodicals, helps prepare special University publications, answers requests for information and helps writers, photographers, and broadcasters 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 athletic 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 students work or observe in various OPI offices from time to time, in cooperation with the School of Journalism's practicum 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 University 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 giving. A private nonprofit corporation, the Foundation raises funds to help the University in reaching its educational objectives through three major programs: annual giving, capital campaigns and planned or deferred giving.

Organized in 1936, 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, manage, use or distribute gifts, bequests and trusts, all for the benefit of The University of Iowa. As a private corporation, its investment 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, student 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 efforts have made 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 concerned with the University's welfare.

Planned and Deferred Giving

Individual financial situations vary a great deal, and finding financially sound giving programs for individuals is another service 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 necessary to formulate University schedules and new building programs. 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 recruitment, interviewing, screening, testing, placement and salary and fringe benefit administration for full-time and part-time, permanent and temporary, nonsalaried 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 regulation and accounting personal record data for both faculty and staff employees.
Scholarships and Loans

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 statements through ACT Financial Aid Services, Box 1000, Iowa City 52240, or College Scholarship Service, 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.

Freshman 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, EOF 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 EOF 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 $6,000 overall; graduate students may borrow up to $2,500 a year and $10,000 overall. Applicants must be citizens or permanent residents of the United States. Freshman have preference. 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. is enrolled or accepted for enrollment as a full-time student pursuing a course of study leading to degrees of doctor of medicine, osteopathy, dentistry, 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- 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 of 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-
Student Aid Scholarships—Resident students in colleges of Liberal Arts, Engineer- ing, Business Administration, Nursing, Pharmacy
Iowa City Chapter of the United Nations Association—Scholarship Opportunities Program participants; resident students

Athletic
Mike Finkin Memorial Scholarship Award—Available in April or May to a senior student who exhibits the ideals of Mike Finkin, for his ten year at Iowa, named by the Athletic Department of Iowa and confirmed and admin- istered by the University Committee on Student Awards and Aid
Terry Goodson Award—Named by the Director of Athletics and head coaches in football, hardwood, baseball, tennis, track and wrestling, given annually to a student athlete who best represents the ideals of the late Terry Goodson.
Bucky O’Connor Memorial Scholarship Award—Named by the Director of Ath- letics, basketball coach, golf coach, sports information director and the Direc- tor of Student Financial Aid must be a member of the tournament or golf team who excelled in your sport, scholarship and athletic ability.
Peterson F. Judson Memorial Scholarship Fund—To provide financial assistance to student athletes whose intercollegiate athletic ability has expired, but who are still enrolled at The University of Iowa.

Business Administration
ALCOA Foundation Scholarships—Junior or senior in accounting
Arthur Anderson & Co. Accounting Award—Accounting
Carroll Scholars—Iowa—All University
Pat Crow Award—Major senior, preferably business administration major with interest in retail clothing business
Emers & Emers—Accounting
FS Services, Inc. Scholarship—Junior and senior accounting major with interest in farm or farm community background in top 25 percent of class
Business & Sales Awards—Senior among top five accounting students
Home Federal Savings and Loan Association—Scholarships, research grants to further education in finance, insurance, real estate
Iowa Foundation for Insurance Education—Scholarships—Junior or senior in business or business administration—$50 each to one junior or senior in accounting, one in marketing
Merritt Savings—$500
Tim McCarthy Memorial Award
Clerk A. Phillips Scholarship—Junior or senior in business administration or junior in accounting with financial need
Pete Wathorne Foundation Award—Accounting
Bruce M. Robertson Scholarship—Iowa high school graduate, $1,000 for senior year

Finance—Scholarship—Junior or senior in business administration
Accounting

Dentistry
David Scholarship
Oral & Facial Surgery—Juniors or seniors, $500
W. E. Johnson Company Dental Scholarship—Junior or seniors, $500
Scholarship Award—Juniors or seniors, proficiency in orthodontics
Scannin Scholarship—Two two-year resident tuition scholarships

Engineering
American Society of Civil Engineering Scholarship—Junior or seniors

Hygiene
Oral & Facial Surgery—Juniors or seniors, $200

American Chemical Society—Junior or seniors.
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 assistants; assistants are also eligible for tuition scholarships; nonresident assistants (one-quarter time or more) and fees are reduced to resident rates.

University teaching-research fellowships—For doctoral students and first-year graduate students entering doctoral programs; typical stipends of $4,000 a year on a year-around 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—$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 includes summer study, plus $500 for each dependent and full tuition.

NSF graduate fellowships—For students interested in social, biological or physical sciences; provides stipends of $2,400-$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 traineeship, 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 at 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

Graduate fellowships—$1,000 a year.

Graduate research fellowships—$1,000; two years.

Graduate student assistantships—$1,000 a year.

Liberal Arts

Graduate fellowships—Up to full tuition and fees.

Sociology: Master's Degree

Appointments are available in the Department of Sociology, University of Iowa. The University of Iowa is an equal opportunity/affirmative action employer.

Visiting Professorships

Appointments are available in the Department of Sociology, University of Iowa. The University of Iowa is an equal opportunity/affirmative action employer.

Graduate Assistantships

Appointments are available in the Department of Sociology, University of Iowa. The University of Iowa is an equal opportunity/affirmative action employer.

Graduate Student Assistantships

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Graduate Research Fellowships

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Graduate Teaching Assistantships

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Scholarships and Loans

100

Romney Advertising Internship—To give outstanding student in advertising an opportunity for agency experience between junior and senior years. $100 School of Journalism Interest Foundation Scholarship—Amount varies School of Journalism Merit Scholarships—Freshmen, sophomores, juniors, seniors.

Seniorship Scholarship—For a freshmen minority student who is also eligible for Special Freshman Scholarship—$1,000. High school senior planning to enroll in the School of Journalism, and $100 freshman. $200 sophomore. $300 junior. $400 senior. A $1,000 New England Newspaper Foundation Scholarship—$1,000 from WFMV NewsRadio—Radio-television journalism student: recipient spends summer observing and participating in WFMV station's operations. $1,500

Medicine

(Annotated upon recommendation of the College faculty committee and dean.)

Richard F. Adams Memorial Scholarship—Full resident tuition

Jane and Charles J. Kembler Scholarship for Women—$1,500 from the University of Iowa

Earl Ricketts-Doran Scholarship and Undergraduate: Full resident tuition

from the University of California

School of Medicine

Full resident tuition

Elizabeth Smith Enslow Medical Scholarship—Senior women

Future Medical Scholarship

Ann and John A. E. Fowler Scholarship—$500; $1,500; $2,000

Dr. Theodore A. Wells Scholarship

Nursing

Psyciatric Mental Health Nurses—$5,000 plus tuition, fees, junior, senior, in health care programs: registered nurses in senior year, in preparation for graduate study in psychiatric mental health nursing

Army Nurse Corps Student Nurse Program—Tuition, books, burs; fees, board and room allowance, monthly salary: junior, sophomore, junior in a full-time program in a four-year, six-month program: scholarship, $1,500; $2,000

Pharmacology

American Foundation for Pharmaceutical Education Scholarship—Students in last three years of school: maximum $500

Carroll Scholarship—For Artistic Ability

John W. Gregory Foundation Scholarship—$200, minimum 3.5 average, $500

Three Memorial Scholarships—All University

Iowa Pharmacological Association Scholarship—Student who has completed a degree, $2,000; $3,000; $5,000

American Pharmacological Association Women's Auxiliary Scholarship—Women, $500

Mary's Drug Store Scholarship—$250

Wetherell-Turner Scholarship—Study in full-time study with mini- mum 25 average for minimum of 20 semester hours: $1,275

Reserve Officers Training Corps

ROTC Scholarships—Available almost competitively: freshmen through senior years in Army Air Forces ROTC program; full tuition, room, board, up to $3,000 annually; $1,000 annual increment to $2,500 during senior year. Scholarship recipients must meet Army ROTC requirements and be in good academic standing. A $1,000 annual increment to $3,000 during senior year. A $1,000 annual increment to $3,000 during senior year.

Loan Funds

All-University

Barry D. Shenkman Loan—Assistance to members of the University

Carr Graduate Fund

Daughter of the American Federation Student Loan Fund—Junior and senior women residents of Iowa: $200; $300

Don's Loan Fund—$1,000; 10:10 interest, $100 maximum. 10:50 interest, $50 maximum

Dolphin Club Loan Fund—Priority for Dolphin Club members

Primedia Pupil Memorial Loan Fund—See Dental Loans

Ford Foundation Green Science Engineering

General Loan Fund

Chinah-June Goodrich Student Award—Assistance to students in need of financial aid

New Hope Loan Fund

Women and Men Hope Loan Fund—Assistance to men and women

Huntington Foundation Student Loan Fund—Pursue medical, dental, nursing, or veterinary school

Interscholastic Student Council Loan Fund—$1,000; $2,000

Iowa City Boys' Home Student Loan Fund

Iowa City Football Club Loan Fund—$500, interest-free, $100 maximum

Iowa City Basketball Club Loan Fund—$1,000, interest-free, $100 maximum

Iowa State Pupil Memorial Loan Fund—Interest-free, $100 maximum

Needleman Loan Fund—$1,000

Old Gold Development Loan Fund

Iowa City Boys' Home Loan Fund

Donald Scovil Loan Fund—Special education

Alumni Educational Foundation Loan Fund—Applicants must be 15 or over, repayment at three years: $1,500

Sheridan-Downey Loan Fund

Junior Loan Fund

Sproule Loan Fund—Preference to Arkansas, Iowa, high school graduates who have completed at least one year at the University

G. E. Taylor Loan Fund—Foundation of Social Work

University Pupenicicical Loan Fund

Business Administration

Barry D. Shenkman Loan—High-ranking senior and graduate students: apply at the University

Dentistry

American Dental Association Fund for Dental Education
SCHOLARSHIPS AND LOANS

Breese Memorial Student Loan Fund
Gillette-Staples Scholarship Loan Fund of the Association of American Women

Student Loan Fund—Fifth-year graduate students; $5,000 maximum.

Iowa Dental Association Student Loan Fund—Freshmen

Erling Loan Fund for Social Students

Old Gold Development Loan Fund

Starts Loan Fund

American Dental Trade Association—Scholarship

International College of Dentists USA sectional Student Loan Fund

Charles W. Crow Loan Fund

Dental Hygiene

Alpha Kappa Gamma Loan Fund—Seniors, second-semester junior

Iowa Dental Association Women’s Auxiliary Loan Fund

Wolffe-Patt Memorial Loan Fund—Preference to graduate students

Charles H. Berggarth Memorial Loan Fund

Iowa Dental Hygienists’ Association Loan Fund

ENGINEERING

College of Engineering Loan Fund—Short-term

Iowa City Engineering Club Loan Fund

Ford Foundation Green—Predoctoral production loans to future engineering students apply to Dean, College of Engineering

Ross Middeldorp Iowa Memorial Loan Fund—$250.00 delay emergency loans

Philip F. Herring Student Loan Fund—See Graduate

LAW

American Bar Association Loan—Second- and third-year students; up to $1,500 a year; repayable after graduation.

Iowa Law School Loan—Long-term; repayable at three percent interest, beginning one year after receipt of degree, and student is employed in public or nonprofit private institution, up to 50 percent of balance due at beginning of such employment.

Iowa Law School Foundation Loan—Short-term

Law Consolidated Loan Fund—Second- and third-year students; short-term

LIBERAL ARTS

Thomas Cole Loan Fund—Graduating students

Dolechok Loan Fund—Students who have completed at least one year

Low Memorial Student Loan Fund

Phi Epsilon Kappa Loan Fund—Physical education for men, women

Great Danube Rond Loan Fund—Computer science students

S. C. Williams Loan Fund—Sophomores or seniors

MEDICINE

(Apply to Dean of the College)

Berk Loan Fund

Breese Memorial Student Loan Fund

Graduates of the College of Medicine Loan Fund—Sophomores through senior year

Iowa Medical Tuition Loan Plan—Iowa residents who agree to practice general medicine in Iowa for at least five years after completion of medical training; state funds provide interest up to three years

Erling Loan Fund for Medical Students

College of Medicine Loan Fund

George M. Mittendorf Loan Fund

Fisk Students Memorial Loan Fund

Sedona Medical Foundation Iowa Medical Society Medical Student Loan—At the sophomore, junior and senior classifications and at the freshman level in the case of tandem leadership

Shawnee Trust Fund—Iowa residents

Shibb Foundation Loan Fund

NURSING

Nursing Student Loan Program—Full-time nursing 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 20 percent per year of full-time employment as professional nurse in public or nonprofit private institution, up to 20 percent of balance due at beginning of such employment.

Erling Loan Fund for Nursing Students

U of I Alumni Scholarship Loan Fund—Seniors, seniors, $300 maximum

S. Lemay Thompson Loan Fund

1961 Nursing Class Loan Fund

RESERVE OFFICERS TRAINING CORPS

Lt. Col. Stafford W. Barris Memorial Loan Fund—Advanced Army ROTC students
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 procedure for the selection of recipients may be obtained from the administrative 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—Male with highest scholastic standing for first two years of graduate work in architecture, chemical engineering or biochemistry.** Bullen Award—$50.00; for efforts in self-education while maintaining优良的学术成就。

**Bread Service Award—His / her memership of bread membership.** Bangs Award—Junior with highest scholastic average among students elected to Phi Kappa Sigma as freshman.

**Bureau Award—Outstanding potential in radio broadcasting at University of Missouri class.**

**Budd Award—$100 to active Mortar Board member.**

**Buehler Award—$50.00; government bond; junior women only; not an example of excellence and contributions of Mrs. Virgil Buehler to the University community.**

**Hoffman Award—Juniors, academic excellence, critical independence, character, personal and social development for students in the University.**

**Jessee Award—Senior with highest scholastic standing for the Senior year.**

**National College of Dentistry Award—Senior with highest scholastic standing for the Senior year.**

**American Academy of Oral Pathology—Senior who has shown the most interest, research potential, and promise in the field of oral pathology.**

**American Academy of Oral Radiology—Senior; special interest in oral radiography.**

**American Academy of Periodontology Award—Outstanding student in periodontology.**

**American Association of Endodontists Award—Senior; highest proficiency and interest in endodontics, and exemplifying A.A.E. Smith.**

**American Association of Orthodontists Award—Senior; exceptional interest in orthodontics.**

**American College of Dentists Award—Senior; outstanding paper on topic assigned by the A.C.D.**

**American Dental Society of Anesthesiology Award—Senior; outstanding ability or promise in this area.**

**American Society of Dentists for Children Certificate—Senior; interest and proficiency in children's dentistry.**

**Black Drug Company Award—Senior; best essay on a subject chosen by Dean of College.**

**Wendy Collins Dairy Award—Outstanding Junior in clinical operative dentistry.**

**Dental Class of 1951 Award—$150.00; senior or junior student in dentistry, scholarship, professional attitude, character, personality.**

**Dental Class of 1952 Award—$150.00; highest scholastic standing for the Senior year.**

**Dentists' Supply Company Award—Outstanding senior in prosthodontics.**

**Fennel Memorial Award—Senior; excellence in basic science, interest in oral manifestations of systemic diseases.**

**W. G. Fennell Memorial Award—Dental graduate returning advanced studies in dental specialty or allied medical science.**

**L. H. Hoke Award—Outstanding achievement in oral surgery research.**

**International College of Dentists Award—Outstanding senior; present professional growth and development, upper class of their class.**

**Junior Society of Oral Surgeons Award—$75.00; most promising senior in oral surgery.**

**Larrieu Periodontics Award—Top junior in periodontics.**

**L. H. Hoke Memorial Award—Senior for excellence in periodontics.**

**Mary S. Rank Award—Top Junior in orthodontics showing high scholastic proficiency and promise.**

**Senior Society of Oral Surgeons Award—$75.00; most promising senior in oral surgery.**

**Senior Society of Oral Surgeons Award—$75.00; most promising senior in oral surgery.**

**Wenner Kogel Memorial Award—Outstanding senior in radiology.**

**Western Intercollegiate Conference Athletic Association Medal—Graduating senior with a high scholastic standing in scholarship and athletics.**

**College of Business Administration**

**Alpha Chi Sigma Award—Graduating senior with highest scholastic record.**

**Beta Gamma Sigma Award—Highest ranking junior member.**

**Beta Gamma Sigma Award—Highest ranking senior member.**

**Newt Hendler Award Class of 1947.**

**Phi Gamma Nu—High ranking senior woman in the College.**

**College of Dentistry**

**Alpha Omega Dental Association Award—Senior student showing the most promise in field of dental medicine.**

**American Academy of Oral Pathology—Senior who has shown the most interest, research potential, and promise in the field of oral pathology.**

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**Western Intercollegiate Conference Athletic Association Medal—Graduating senior with a high scholastic standing in scholarship and athletics.**
American Society of Test Engineer Award—1970 senior in mechanical engineering, scholastic achievement, interest in tool and production engineering.

Joe R. Brown Award—Senior in electrical engineering, highest scholarship average first two years.

General Motors Scholarship

Institute of Electrical and Electronic Engineers Award—Three best papers presented at the Ole Miss EEE conferences.

Edwin E. Bere Award—Senior in electrical engineering, scholarship, character, professional promise, department to Engineering and College.

Phi Psi Sigma Award—Junior in mechanical engineering, personal development during the two years.

Beta Kappa Chi Award—Highest scholarship standing in freshmen.

The E. E. Engineer—Opportunity; highest in competition based on popularity, scholarship, service to College.

College of Libral Arts

American Institute of Chemical Engineers Outstanding senior in chemistry


Chi Omega Award—Distinguished women with highest average in architecture, economics, political science, psychology or sociology (major among departments).

Chapin Memorial Award in Composition—Major in English

Dean's Award—1970, freshman, sophomore, junior to seniors.

Margaret Foster Hoke Award—Romeo economic junior.

Johnathan Memorial Prize—Distinguished senior, all coursework in college; highest academic standing in class.

Joseph Pristerey Prize—Highest standing in 3:1 and 3:2.

Keck—General excellence in psychology

Greek: Excellence in Greek language and literature, by examination.

Latin: Sophomore, excellence in Latin language, by examination.

Mathematics: Undergraduate, enrolled in Mathematics I in first year, by examination, covering 8th grade, plane trigonometry, analytical geometry, and differential and integral calculus.

Phi Delta Alpha—Senior, excellence in Greek language and literature.

Phi Lambda Delta—Senior, highest standing in American history.

Pi Lambda Alpha—Junior in chemistry; highest scholarship standing.

Pi Lambda Theta—Junior, highest scholarship standing in chemistry; highest grade point average in chemical literature; most promising in research.

Pi Mu Eta—La Sprengel Memorial Award—Outstanding senior in music, performance.

President's Staff Award—Women graduate student; highest standing in music or visual art.

Phi Epsilon Lambda—Junior, advanced degree student in business administration.

William Pristerey Prize—Excellence in German language and literature.

Journalism

Louis B. Daron—Community Journalism Award—1970, junior; demonstration and outstanding promise in news-editorial work.

Luther A. Bernie Prize—Graduating senior, highest in scholarship, leadership, promise.

June P. Weeks Award—Outstanding senior woman.

Johnathan Memorial Prize in Journalism—Best news, sports and feature stories for The Daily News.

Rocky Mountain News Award—Senior women: highest scholarship rank, demonstrated interest in development of human understanding and human rights.

Journalism Alumni Award—Outstanding woman, sophomore, junior, first and second in class.

Color-Register Stamps News Photography Award—Best Daily News images Ellis H. Noone Award—Junior or senior in advertising based on academic record.

Willis Pearson Award—Undergraduate student in journalism who is interested in management.

Chapel Renewal Award—Outstanding student in public relations.

Dean's Book Award—Outstanding freshman in journalism.

First Virginia Writing Award—Outstanding first-year student in interpretive writing.

M. E. Terrell Writing Award—Graduate student, for distinguished achievement in research.

J. E. W. Turner Award—Outstanding achievement in newspaper writing.

Hary E. Schmermacher Award—Senior receiving Luther A. Brewer Key Sigma Delta Chi Award—Outstanding school paper.

College of Medicine

Walter L. Weirying Award in Biochemistry—Outstanding students.

Harvey E. Burschell Award—1970, best paper presented at Student Research Conference.

Margaret E. Hauser Memorial Award—Outstanding student in public health.

James Hunter Senior Award—Senior, best research paper or scientific review in medicine.

Joyce Longfellow Award—Outstanding third-year student in medical hygiene.

Large Awards—Two outstanding men of each sex.

Johnson & McIntyre Award in Pharmacology—Outstanding student.

Preston Memorial Prize—Outstanding freshman in gross anatomy.

Riggs Award—Outstanding senior in medical physiology.

Updike Achievement Award in Pediatrics—Outstanding senior.

College of Nursing

American Legion 4 & 8 Club Scholarship Award—$75.00 to two seniors for junior year.

La Lo Gerich Scholarship Award—$25.00 to a sophomore for the junior year.

Cornelia Calhoun Barnett Award—$25.00, sophomore, excellence in clinical practice.

Meador E. Manse Award in Nursing—$100.00 to a nursing student, outstanding performance in senior year.

Nila E. Smith Memorial Award—$100.00 to a junior for senior year.

John E. Terry Memorial Scholarship Award—To a sophomore or junior student or.

College of Pharmacy

Brett P. Sharp—Unique contribution through extracurricular activities.

Chapel First—Distinctive achievement over junior year.

College of Pharmacy Outstanding Students Award—Outstanding students performance, potential.

Gregory Pharmacy Award—$300.00, junior, minimum 3.0 average, professional promise, oral.

Harry B. Nyberg Company Scholarship—Who has completed Pl, minimum 1.5 average.

Joiner and Johnson Award—Senior, scholastic excellence, professional attitude.

Kraft Medicine Award—Outstanding achievement in pharmacy technology.

Laura J. Macneal Award—Minimum 2.5 average, valuable potential as community pharmacist.

Mark Prater—Outstanding senior in pharmacy.

Meditron Scholarship Award—Outstanding senior in pharmacy.

Pharmacy Faculty Award—$50.00, outstanding senior.

Russell—Outstanding senior.

Rho Chi Prize—Highest freshman scholarship average.

Schooling Prize—Excellence in organic chemistry.
Board of Regents Statements

Human Rights

The University is guided by the precept that in no aspect of its programs shall there 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

(1) The Constitution of the United States and of the State of Iowa call for equal liberty and equality and afford the equal protection of the laws to all persons. This statement reflects the University's concern for equal opportunity practices, thereby the vision of the founding fathers and thereby the solemnly professed democratic guarantees.

(2) The General Assembly of the State of Iowa enacted the Iowa Civil Rights Act of 1965. The clear intent of this law is to assure that the rights to equal treatment of the people of Iowa shall not be abridged.

(3) In recognition of the Board's national policy and the obligations imposed on all units of state government by the Parkinson's Amendment to the United States Constitution, the Board of Regents deems the following to be its policy:

Statement of Policy—The Board of Regents has a specific 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 opinion, 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 offices which are responsible to the Board of Regents shall appoint, assign and advance employees on the basis of merit and fitness. Each institution under the Board of Regents shall promulgate a fair and unambiguous written policy of nondiscrimination in employment. Such policies shall be periodically reviewed and revised to reflect the changing conditions of employment. Each such institution shall also regularly review its personnel practices and procedures with a view to correcting any which might contribute to discrimination in appointment, assignment or advancement on the basis of race, color, religion, national origin, sex or ancestry. All institutions shall provide, on request, a copy of such a written policy.

The employment practices of the Board of Regents shall be in strict conformity to the provisions of the Iowa Civil Rights Act of 1965 and shall be reviewed periodically by the President and the Governing Council to assure their compliance with the provisions of the Iowa Civil Rights Act of 1965.

The Board of Regents urges all persons to respect the rights of others in all ways.

Residence

Section D. Classification of Residents and Nonresidents for Admission and Fee Purposes

1. General—Students enrolled in one of the three state institutions shall be classified as residents or nonresidents for admission and tuition purposes by the registrar. The decision shall be based upon information furnished by the student and other relevant information. The registrar is authorized to require such written documents, affidavits, verifications or other evidence as are deemed necessary to establish the domicile of a student, including proof of occupation,appy, years of ownership or appointment of a property. The burden of establishing that a student is exempt from paying the nonresident fee is upon the student.

For purposes of resident and nonresident classification, the word "resident" shall include legal guardians or legal representatives in loco parentis in all cases where lawful custody of any person for admission has been obtained by the legal guardians or legal representatives in loco parentis other than legal parents.

2. Source of native parentage—Regulations regarding residence, classification and fee status are contained in the student catalog for the institution in which the student seeks admission.

3. Students who are nonresidents—The residence of a minor shall be that of the parent(s) with whom he or she resides. If there is a dispute as to the residency of the parent(s) with whom the minor resides, the minor shall be deemed to reside with the parent(s) whose residence has been assigned by the court by the date on which the minor applies for admission.

4. Students who are nonresidents—The residence of a minor shall be that of the parent(s) with whom he or she resides. If there is a dispute as to the residency of the parent(s) with whom the minor resides, the minor shall be deemed to reside with the parent(s) whose residence has been assigned by the court by the date on which the minor applies for admission.
to be a recommendation at the beginning of the next semester, quarter or session in which the student is enrolled after the date of the parent's removal from the state.

A minor under 18 years of age shall not be granted resident status for the purpose of the presidency of the student, if the minor has lived with the student for less than three years prior to his or her 18th birthday.

Students 21 years of age and married students under 21 years of age—A student 21 years of age and married shall be classified as a resident if the student's spouse has lived in the state for at least three years prior to the date of the student's marriage.

4. Students over 21 years of age and married and students under 21 years of age—A student 21 years of age and married who is married to a student 21 years of age shall be classified as a resident if the student's spouse has lived in the state for at least three years prior to the date of the student's marriage.

5. General rules—The resident status for admissions, fees and tuition purposes of a married student shall usually be determined under the same rules pertaining to the classification of the spouse. Married students under 21 years of age shall be considered to have attained legal age as of the date of their marriage.

6. Admission of graduate students—Admission of graduate students to PhD programs shall be made under the same rules pertaining to the classification of the spouse. Married students under 21 years of age shall be considered to have attained legal age as of the date of their marriage.

A student who has moved into the state as a result of military or civil service with the government, or the minor status of such persons, are entitled to resident status. However, if the minor is a student in one of the following categories, the minor's status may be claimed:

a. Minor status as a student in one of the following categories:

1. A student who has moved into the state after the date of the student's marriage.

2. A student who has moved into the state as a result of military or civil service with the government, or the minor status of such persons, are entitled to resident status.

3. A student who has moved into the state as a result of military or civil service with the government, or the minor status of such persons, are entitled to resident status.
A. The 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 material, as required, to the Director of Admissions. Students may not be registered until they become officially admitted by the Division of Admissions.

1. College of Business Administration

Applications for admission to the College of Business Administration should be submitted to the Director of Admissions. Applicants should file their applications as early as possible, since this will give the admissions committee the time to review the applications. High school seniors who meet the minimum requirements for admission will be considered for admission. All other applicants will be considered for admission on the basis of the grades and test scores submitted with the applications.

2. College of Education

Applications from students who have been classified as type "A" (qualified admission) are reviewed immediately by the admissions committee. The minimum requirements for admission are as follows:

- A grade-point average of 3.0 average on all courses attempted.
- A grade of "B" or better in all college-level courses attempted.
- A minimum of 12 credit hours in college-level courses at the University of Iowa, and no more than four credit hours in college-level courses at a community college.

3. College of Engineering

Applications from students who have been classified as type "B" (qualified admission) are reviewed immediately by the admissions committee. The minimum requirements for admission are as follows:

- A grade-point average of 3.0 average on all courses attempted.
- A grade of "B" or better in all college-level courses attempted.
- A minimum of 12 credit hours in college-level courses at the University of Iowa, and no more than four credit hours in college-level courses at a community college.

4. School of Law

Applications from students who have been classified as type "C" (qualified admission) are reviewed immediately by the admissions committee. The minimum requirements for admission are as follows:

- A grade-point average of 3.0 average on all courses attempted.
- A grade of "B" or better in all college-level courses attempted.
- A minimum of 12 credit hours in college-level courses at the University of Iowa, and no more than four credit hours in college-level courses at a community college.

5. College of Medicine

Applications from students who have been classified as type "D" (qualified admission) are reviewed immediately by the admissions committee. The minimum requirements for admission are as follows:

- A grade-point average of 3.0 average on all courses attempted.
- A grade of "B" or better in all college-level courses attempted.
- A minimum of 12 credit hours in college-level courses at the University of Iowa, and no more than four credit hours in college-level courses at a community college.

6. College of Dentistry

Applications from students who have been classified as type "E" (qualified admission) are reviewed immediately by the admissions committee. The minimum requirements for admission are as follows:

- A grade-point average of 3.0 average on all courses attempted.
- A grade of "B" or better in all college-level courses attempted.
- A minimum of 12 credit hours in college-level courses at the University of Iowa, and no more than four credit hours in college-level courses at a community college.

7. College of Public Health

Applications from students who have been classified as type "F" (qualified admission) are reviewed immediately by the admissions committee. The minimum requirements for admission are as follows:

- A grade-point average of 3.0 average on all courses attempted.
- A grade of "B" or better in all college-level courses attempted.
- A minimum of 12 credit hours in college-level courses at the University of Iowa, and no more than four credit hours in college-level courses at a community college.
7. College of Nursing

Applicants for admission to the undergraduate program in nursing must present a minimum of 20 semester hours complete in an accredited liberal arts college, including satisfactory performance of the following minimum requirements:

Biology—University of Iowa or transfer applicants must have satisfied the dyadic requirements of the College of Liberal Arts at The University of Iowa.

Applicants from other institutions may qualify by completing an adequate number of semester hours in English composition and two semester hours of English in speech.

Mathematics—All applicants must have completed two and one-half years of mathematics in the secondary school level, in addition to a one-year level on the mathematics and the University of Iowa, or completed college-level algebra and college-level algebra with trigonometry, or completed college-level algebra and college-level algebra with trigonometry and a satisfactory score on the high school mathematics placement test of the University of Iowa.

Chemistry—All applicants must have completed four semester hours of college-level chemistry in inorganic chemistry. Applicants from the College of Liberal Arts at The University of Iowa must also complete one or more 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 nurses before admission to the College of Nursing.

To be considered for admission, an applicant should have obtained a cumulative grade point average of at least 2.5 on all college work undertaken. The grade point average is based upon the marking system of The University of Iowa, in which a grade of "A" is equal to 4.0. Other marking systems will be evaluated by the Office of Admissions.

The specific requirements for admission listed above do not lessen admission to the College of Nursing. From the applicants meeting the minimum requirements, the admissions committee of the College of Nursing will select 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 admission to the Committee of Admissions, The University of Iowa, Iowa City, Iowa. Applicants with no previous preparation in college may apply for admission to the College of Nursing provided they meet the same requirements, except that they may be admitted either the first or second semester. The closing date for receiving applications shall be April 15 for first semester and November 15 for second semester.

8. College of Pharmacy

General Basis for Admission

Fulltime students of the specific requirements for admission do 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.

College Work

The college work as outlined below will meet the minimum academic requirements for admission to the College of Pharmacy. The minimum should include 20-22 semester hours of college-level work, exclusive of credit in military and air science education. The semester hour requirement must include:

1. At least four semester hours of courses in inorganic chemistry.
2. At least four semester hours of courses in organic chemistry.
3. At least two semester hours of courses in microbiology.
4. At least two semester hours of courses in general chemistry or applied chemistry.
5. At least two semester hours of courses in biology.
6. At least one semester hour of courses in English composition or speech.

College Work—Eight semester hours

Physics or Chemistry—Eight semester hours

Students from other institutions may substitute a comparable eight-semester-hour course in biology for one of the above requirements.

Military or Air Science (if available)—zero to two semester hours

Students who present military obligations in meeting the above requirements may be admitted to the College of Pharmacy upon the recommendation of the chair of the College of Pharmacy, the Director of Military Science, and the required transcripts should be filed before March 1 for the fall to enter pharmacy in September.

Application Form

Applications for admission are required to take the American College Test Pro

Correlation Requirements

Applicants who have completed work in a college of pharmacy accredited by the American Council on Pharmaceutical Education may, if their college academic average is acceptable, be admitted and granted advanced standing toward the degree Bachelor of Science in Pharmacy.
Wills, David P., B.A. Auburn, 1946; M.S. Galveston, 1969
Wills, Paul W., B.C.E., Iowa State, 1968
Adjunct associate professor, Civil Engineering, 1968
Willshak, John Richard, B.A., 1936; M.A., 1938; Ph.D. Cornell, 1940
Professor, Sociology and Anthropology, 1939 (1942)
Wilsbacher, William, B.S., Ohio State, 1950; M.S.A., Courant Institute of Mathematical Sciences, 1952
Professor, Art and Art History, 1946 (1957)
Wilson, Emlyn M., B.S., Wyoming, 1920; M.S., 1924
Assistant professor, Civil Engineering, 1920
Wilson, William E. B.A. Kansas City, 1894; M.D. State University of New York (Syracuse), 1893
Professor, Internal Medicine and Pharmacology, 1939 (1945)
Willing, David, B.A. Robeson, 1941
Research associate, Surgery, 1963 (1964)
Winfield, Frank H., B.S. Wisconsin, 1925
Instructor, Medical Technology, 1927
Wise, John Robert, B.A. Cornell, 1936; M.F.A. Iowa, 1941
Associate professor, Speech and Dramatic Arts, 1936 (1937)
Winters, George A., B.S. Hopkins, 1944; M.D. Maryland, 1947
Professor and head, Psychology, director, State Psychopathic Hospital, 1971
Wintermeyer, Lawrence A. Iowa, 1948; M.D. 1961
Wise, Robert F., B.S., Lehigh, 1955; Ph.D. Indiana, 1962
Associate professor, English, 1957 (1958)
Wollum, Kent C., B.S. Appalachian State, 1957; M.S. North Carolina, 1962
Assistant professor, Home Economics, 1971
Assistant professor, Oral Surgery, 1971
Wood, James N., B.S. Baptist, 1940; Ph.D. California Institute of Technology, 1947
Wood, Josephine, 1972
Professor, Mathematics, 1972
Woodworth, Denton J., M.D. History of Medicine, 1962; A.B.C.A.
Rural Colleges of Art (England), 1966
Assistant professor, Art and Art History, 1976
Woodwell, Myron, B.S. Kansas, 1916; M.S. Chicago, 1919; Ph.D. 1926
Professor emeritus, Home Economics, 1940 (1945)
Woodworth, George C., B.S. Curtiss, 1902; Ph.D. Minnesota, 1906
Associate professor, Botany, 1931
Wright, Pearl B., B.S. Missouri, 1964; A.M. 1968; Ph.D. 1976
Associate professor, Botany, 1948 (1957)
Wixson, Willard S., B.S. Syracuse, 1902; B.S. Syracuse, 1907; B.S. Syracuse, 1908
Librarian, University Library, 1971
Wixson, Willard S., B.S. Syracuse, 1902; M.S. Rhode Island, 1905; M.S. Yale, 1907
Ph.D. 1910
Associate professor, Chemistry and Hydraulics, 1970
Workeys, Douglas B., B.S. Wisconsin, 1916; Ph.D. 1947
Dean and professor, Pharmacy, 1972
Professor, Economics, 1959 (1972)
Wright, Melvin B., B.S. Washington and Oregon, 1949; M.S. Pittsburgh, 1952; Ph.D. 1954
Professor, Geology, 1946 (1971)
Wyckoff, Harlan B. Iowa, 1920; Ph.D. 1922
Research associate, Physics and Astronomy, 1920 (1929)
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