8-1-1974

Catalog of The University of Iowa, 1974-76

University of Iowa

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The University of Iowa Bulletin, n.s. no. 2091

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# University Calendar

## FIRST SEMESTER

<table>
<thead>
<tr>
<th>Event</th>
<th>1974-75</th>
<th>1975-76</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration begins</td>
<td>August 27</td>
<td>August 26</td>
</tr>
<tr>
<td>Classes begin</td>
<td>August 29</td>
<td>August 28</td>
</tr>
<tr>
<td>Holiday</td>
<td>September 2</td>
<td>September 1</td>
</tr>
<tr>
<td>Thanksgiving recess begins</td>
<td>November 27</td>
<td>November 26</td>
</tr>
<tr>
<td>Holiday</td>
<td>November 28</td>
<td>November 27</td>
</tr>
<tr>
<td>University holiday</td>
<td>November 29</td>
<td>November 28</td>
</tr>
<tr>
<td>Classes resume</td>
<td>December 2</td>
<td>December 1</td>
</tr>
<tr>
<td>First-semester classes end</td>
<td>December 12</td>
<td>December 11</td>
</tr>
<tr>
<td>Examination week begins</td>
<td>December 14</td>
<td>December 13</td>
</tr>
<tr>
<td>Examination week ends</td>
<td>December 20</td>
<td>December 19</td>
</tr>
<tr>
<td>University holiday (12 noon)</td>
<td>December 24</td>
<td>December 23</td>
</tr>
<tr>
<td>Holiday</td>
<td>December 25</td>
<td>December 26</td>
</tr>
<tr>
<td>University Holiday</td>
<td>December 26</td>
<td>December 26</td>
</tr>
</tbody>
</table>

## SECOND SEMESTER

<table>
<thead>
<tr>
<th>Event</th>
<th>1974-75</th>
<th>1975-76</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration begins</td>
<td>January 9</td>
<td>January 8</td>
</tr>
<tr>
<td>Classes begin</td>
<td>January 13</td>
<td>January 12</td>
</tr>
<tr>
<td>Spring vacation begins</td>
<td>March 7</td>
<td>March 5</td>
</tr>
<tr>
<td>Saturday-only classes meet</td>
<td>March 8</td>
<td>March 6</td>
</tr>
<tr>
<td>Classes resume</td>
<td>March 17</td>
<td>March 15</td>
</tr>
<tr>
<td>Second-semester classes end</td>
<td>May 2</td>
<td>April 30</td>
</tr>
<tr>
<td>Examination week begins</td>
<td>May 6</td>
<td>May 4</td>
</tr>
<tr>
<td>Examination week ends</td>
<td>May 14</td>
<td>May 12</td>
</tr>
<tr>
<td>Commencement</td>
<td>May 17</td>
<td>May 15</td>
</tr>
<tr>
<td>Holiday</td>
<td>May 26</td>
<td>May 31</td>
</tr>
</tbody>
</table>

## SUMMER SESSION

<table>
<thead>
<tr>
<th>Event</th>
<th>1975</th>
<th>1976</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration</td>
<td>June 2</td>
<td>June 1</td>
</tr>
<tr>
<td>Classes begin</td>
<td>June 3</td>
<td>June 2</td>
</tr>
<tr>
<td>Holiday</td>
<td>July 4</td>
<td>July 5</td>
</tr>
<tr>
<td>Session closes</td>
<td>July 25</td>
<td>July 23</td>
</tr>
<tr>
<td>Opening of Independent Study Unit for law and graduate students</td>
<td>July 28</td>
<td>July 26</td>
</tr>
<tr>
<td>Independent Study Unit closes</td>
<td>August 22</td>
<td>August 20</td>
</tr>
<tr>
<td>Holiday</td>
<td>September 1</td>
<td>September 2</td>
</tr>
<tr>
<td>Topic</td>
<td>Page</td>
<td></td>
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<td>11</td>
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<td></td>
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<td>College of Education</td>
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<td>College of Engineering</td>
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<td>Graduate College</td>
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<td>College of Law</td>
<td>305</td>
<td></td>
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<tr>
<td>College of Medicine</td>
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The University of Iowa received its charter from the first Iowa General Assembly on February 25, 1847, just two months after Iowa’s admission to statehood. The University has been in continuous operation since March, 1855. The University now consists of 10 colleges: Business Administration, Dentistry, Education, Graduate, Law, Liberal Arts, Medicine, Nursing and Pharmacy. Within the College of Liberal Arts there are seven schools: Art and Art History, Journalism, Letters, Library Science, Music, Religion and Social Work. The University’s enrollment has stabilized at 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.

Approximately 85 percent of the University’s undergraduate students are enrolled in the College of Liberal Arts. Slightly less than one-fourth of its total enrollment is in the Graduate College. Enrollment in the professional colleges—Dentistry, Law and Medicine—is approximately 10 percent of the University total.

Four-fifths 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 7:6. Slightly more than half of the University’s entering freshmen had B averages or above in high school; approximately 85 percent ranked in the upper half of their high school classes, 23 percent in the upper tenth.

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

The Faculty

The University faculty numbers 1,200 full-time members. Many are nationally and internationally recognized. Most are engaged in continuing 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 library structures—including graduate assistants—have had full-time college-level teaching experience. They are appointed on the basis of their competence in the areas 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 Conference 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

Education—Teacher Education—National Council for Accreditation of Teacher Education

Engineering—Engineers Council for Professional Development

Law—American Bar Association and Association of American Law Schools

Medicine— Interstate Commission on Medical Education (representing the American Medical Association and the Association of American Medical Colleges)

Nursing—National League for Nursing

Pharmacy—American Council on Pharmaceutical Education

Schools

Library Science—American Library Association

Music—National Association of Schools of Music

Social Work—Council on Social Work Education

Departments

Chemistry—American Chemical Society

Dental Hygiene—American Dental Association, Council on Dental Education

Physical Therapy—American Medical Association in collaboration with the American Physical Therapy Association

Psychology—American Psychological Association

Speech Pathology and Audiology—American Speech and Hearing Association

Sessions

The University’s academic year consists 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 been served the University’s liberal approach to education.
General Information

5

ition. 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 expounded 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 acquiesce themselves with the Code and to conduct themselves in accord with the standards it sets forth.

Human Rights
The University is guided by the precept that in no aspect of its programs there shall be a difference in the treatment of persons because of race, creed, color, national origin, age, sex or any other classification 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 works cooperatively with the community in furthering this principle.

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 52242. 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 Admissions Office and must furnish official transcripts and other supporting 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 date listed below. Different deadline dates apply to foreign students.

College of Liberal Arts
Ten days before Registration begins—all sessions.

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
Ten days before Registration begins—all sessions.

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

College of Law
April 1—Summer Session
May 1—First Semester only
(no 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
Ten days before Registration—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
(Note: Prospective foreign students should initiate application procedures one year in advance, to ensure their completion by the deadline date and prior to initiating application procedures should obtain a copy of the University pamphlet, Information for Prospective Foreign Students. The pamphlet may be requested from either the Office of International Education and Services or Office of Admissions, Jessup Hall, The University of Iowa, Iowa City, IA 52242 U.S.A.)

American College Tests
The University of Iowa requires all entering freshmen and undergraduate transfer students to complete the American Coll
Tests (ACT) and have their test scores reported to the University by the time they register for classes. The University of Iowa uses ACT scores for:
Admission—As a criterion for admitting some students un-
conditionally or on probation; for requiring some students to at-
tend a precollege summer session; and for denying admission to applicants who do not meet minimum standards.
Placement—As a basis for enrolling some students from cer-
tain basic course requirements; for placing others in sections de-
signed to meet individual needs; and for advising students con-
cerning their programs of study and future educational plans.
Scholarships—As a criterion for awarding University-adminis-
trated scholarships and loans.
Scholastic Aptitude Test (SAT) scores may be submitted with freshmen 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 under-
graduate admission at complete the American College Tests during the fall prior to his or her anticipated registration.
Applicants who have completed the tests but did not have their scores reported to the University should request this report-
ing from the Records Section, American College Testing Pro-
gram, Box 451, Iowa City, Iowa 52240. Further information, including testing dates and location, may be obtained from high school or college counselors or from the ACT Program.

### Graduate and Professional College Examinations
Prospective Graduate College applicants should take the Gradu-
ate Record Examination (GRE) Aptitude Test or, if applying for admission to a department of the College of Business Adminis-
tration other than Economics, the Admissions Test for Graduate Study in Business (ATUSB). Prospective applicants to the col-
leges of Dentistry, Law or Medicine are required to take admis-
sion tests of the respective colleges.

#### Application Fee
A $10 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
The interest of providing optimum health care, Student Health Service strongly recommends that following their admission in-
coming students submit physical examination reports and per-
sonal health histories on the forms provided for that purpose. This information should affect the student's admissions and other activities as necessary for attending to the student's health needs.

#### Tuition and Fees
The following is the University's schedule of tuition and fees, per semester, for the 1974-75 academic year:

<table>
<thead>
<tr>
<th>Type</th>
<th>Undergraduate</th>
<th>Graduate</th>
<th>Dentistry-Medicine</th>
<th>Law</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-State</td>
<td>$500</td>
<td>$1250</td>
<td>$1650</td>
<td>$138</td>
</tr>
<tr>
<td>Out-State</td>
<td>$1000</td>
<td>$1500</td>
<td>$1850</td>
<td>$150</td>
</tr>
<tr>
<td>International</td>
<td>$1500</td>
<td>$2000</td>
<td>$2200</td>
<td>$200</td>
</tr>
</tbody>
</table>

| In-State         | $2500         | $3500    | $4000              | $375 |
| Out-State        | $3000         | $4000    | $4500              | $435 |
| International   | $4000         | $5000    | $5500              | $550 |

| In-State         | $5000         | $6000    | $6500              | $700 |
| Out-State        | $6000         | $7000    | $7500              | $800 |
| International   | $7000         | $8000    | $8500              | $900 |

Extension courses $30 per semester hour. Correspondence Courses $20 per semester hour.

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 per-
formances by visiting stage and concert artists, at reduced rates; subscriptions to the student newspapers, The Daily Iowan, on a housing unit basis; certain student hospital services; and other activities and services as announced.

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

#### Procedure for Payment of Student Accounts
Tuition and fees, board, room and other University residence hall or fraternity-sorority housing expenses, and such incidental University expenses as library and parking fees, are payable on an installment basis, with billing the first of October, November and December for the fall semester, and the first of February, March and April for the spring semester. A $3 penalty is as-
sessed 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 registra-
tion. There is a $10 fee for reinstatement.
University Marking System

<table>
<thead>
<tr>
<th>Mark</th>
<th>Definition</th>
<th>Grade Points/Semester Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>superior</td>
<td>4</td>
</tr>
<tr>
<td>B</td>
<td>above average</td>
<td>3</td>
</tr>
<tr>
<td>C</td>
<td>average</td>
<td>2</td>
</tr>
<tr>
<td>D</td>
<td>below average but passing</td>
<td>1</td>
</tr>
<tr>
<td>F</td>
<td>failing</td>
<td>0</td>
</tr>
<tr>
<td>R</td>
<td>audit (Graduate College only)</td>
<td>0</td>
</tr>
<tr>
<td>I</td>
<td>incomplete</td>
<td></td>
</tr>
<tr>
<td>W</td>
<td>withdrawn</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>no grade submitted</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>satisfactory (Graduate College only)</td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>unsatisfactory (Graduate College only)</td>
<td></td>
</tr>
<tr>
<td>(not used in computing grade-point averages)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Recognition of High Scholastic Achievement

The University recognizes high scholastic achievement by awarding degrees "with distinction," "with high distinction," and "with highest distinction," based on these criteria:

<table>
<thead>
<tr>
<th>Field</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacy</td>
<td>3.75 and GPA</td>
</tr>
<tr>
<td>Other Colleges</td>
<td>highest 2%</td>
</tr>
<tr>
<td>High distinction</td>
<td>3.50-3.74</td>
</tr>
<tr>
<td>Distinction</td>
<td>next highest 3%</td>
</tr>
<tr>
<td></td>
<td>3.23-3.49</td>
</tr>
<tr>
<td></td>
<td>next highest 5%</td>
</tr>
</tbody>
</table>

Records

All academic records are maintained by the Office of the Registrar and will not be released without written permission of the student. 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.

Numbering of Courses

Each course in the regular University curriculum has an identifying number, preceded by the number of the college, department, or program by which the course is administered. For example, "4.11" is the code for the course numbered 11 in the Department of Chemistry (4), entitled "Elementary Quantitative Analysis." Usually, course numbers below 100 designate courses "For Undergraduates and Graduates," and numbers 200 and above designate courses "Primarily for Graduates."

College of Business Administration

- 8A Accounting
- 63 Business Administration
- 6E Economics
- 65 Business Education

College of Dentistry

- 81 Fixed Prosthodontics
- 82 Operative Dentistry and Endodontics

General Information

- 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 Preventive and Community Dentistry
- 114 Comprehensive Care

College of Education

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

College of Engineering

- 51 Engineering
- 52 Chemical and Materials Engineering
- 53 Civil Engineering
- 55 Electrical Engineering
- 56 Industrial and Management Engineering
- 58 Mechanical Engineering
- 59 Mechanic and Hydraulics

College of Liberal Arts

- 00L Nondepartmental Courses
- 1E Art Education
- 1H Art History
- 2 Botany
- 3 Search and Television
- 4 Chemistry
- 8 English
- 8P English Professional
- 8R English Writing
- 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
Unmarried students with less than 56 semester hours of college credit are required, as a condition of University registration, to live in University residence halls, excepting students who normally would have completed three years at the college level or who qualify for specific exemption. Exemption criteria are outlined in the partial rule brochure available from the University Housing Office, 330 North Capitol Street, Iowa City, Iowa 52242. Exemption requests must be received by the University Housing Office at least 30 days before the semester for which the exemption is requested. Exemption request forms are available from the University Housing Office.

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 not discriminate to any student or the basis of their individual merit as persons, without exclusion or discrimination on the basis of race, creed, color or national origin."

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

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

Single, double and triple rooms with full or partial board are available in the Grand Avenue Residence Halls (west campus), which include Hiltebrant, South Quad, Rivenhall and Slater halls, and in the Clinton Street Residence Halls (east campus), which include Briggs Hall, Carver Hall, Deam Hall and Stanley Hall. A room-only option is available in the South Quadrangle partial board units where living in residence halls may contract for full or partial board.

There are lounges, study rooms, libraries, and recreation rooms in or available to each residence hall.

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 government body and is represented in the government of its residence hall.

Students-occupied residence halls programs and activities provide a wide range of opportunity to pursue social, cultural, recreational and aesthetic interests.

Upperclass Students
Juniors, seniors and graduate students may request residence hall accommodations in buildings or areas reserved for them.

Applications and Assignments
Prospective undergraduate students receive with their application for admission a separate application for residence hall accommodations. Prospective students applying for residence hall accommodations should meet the terms and conditions of the contract, complete all information requested on the application form, sign the contract portion, complete the advance payment form and return the completed application with their check in an amount of $150 to the University Housing Office.

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

Students are encouraged to choose their own roommate(s). Prospective roommates must request assignment together when they apply, preferably with both applications submitted at the same time. The assignment of roommates will not be made until all of the prospective roommates' application materials have been received and both have been admitted to the University. The application last received or the student last admitted determines the date order of assignment. Roommate assignment is made without regard to race, color, nationality or religion.

Students already living in University residence halls are given priority in the assignment of accommodations.

The residence hall application and $50 advance payment constitute a contract offer. An application may be withdrawn by notifying the University Housing Office in writing before the application becomes a binding contract. It becomes binding after June 1, if for the academic year; after December 1, if for the second semester only; after May 15, if for the summer session; or 10 days after the University Housing Office issues notice of the acceptance of the contract and assignment of accommodations. If the notice is made within nine days before the beginning of registration, the contract becomes binding two days before the beginning of registration.

Upon written request, the $50 advance payment will be refunded to applicants who are not admitted to the University, and to those who cancel their residence hall contract in accordance with the terms and conditions set forth in the contract.

Rates
Basic rates for University residence hall accommodations for the 1974-75 academic year are $1,518 for a double room and $1,753 for a triple, with full board. Rates for the several available room and board options vary according to the accommodations, and all rates are subject to change annually.

Married Student Housing
There are 749 University-sponsored apartments available to married students in the Hawkeye Drive, Hawkeye Court and Parklawn complexes.

Rents for 1974-75 range from $90 to $97.50 per month for one-bedroom units (there are only 41 at the lower rate) to $117.50 for two-bedroom units, not including gas, electricity
and telephone. All units are unfurnished. Rates are subject to change annually.

Graduate teaching assistants who have half-time appointments, and who are enrolled for at least five semester hours of coursework each semester, are eligible for teaching assistants' priorities at staff rates.

Married student housing is assigned in the order applications are received. Assignments are contingent on the applicant's meeting all University admission requirements. However, applications may be filled before completion of admission.

A $25 advance payment is required for all apartments at the time they are offered for leasing.

**Off-Campus Housing**

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

**Fraternities**

Twenty undergraduate and six professional fraternities operate chapter houses at Iowa. Houses accommodate 33 to 45 men. Undergraduate fraternities are Arcaia, 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.

Professional fraternities operating chapter houses include Alpha Chi Sigma (chemistry), Alpha Kappa Kappa (medicine), Delta Sigma Delta (dentistry), 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.
Administrative Staff
Dean: Leslie W. Durfey
University Librarian: Dale M. Renzi
Assistant University Librarian: Richard M. Kubat
Assistant University Librarian: Wayne Raney
Administrative Assistant: George T. Kerr
Bibliographer: Frank E. Hanle
Assistant Director Emeritus: Grace Van Wyman

General Facilities
The University's Main Library and its 12 departmental libraries contain approximately 1.7 million volumes. About two-thirds of the collection is in the Main Library whose capacity has been doubled by an addition occupied in 1972. This addition 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 Art Library contains approximately 38,600 volumes; Botany-Chemistry, 49,300; Business Administration, 12,700; Education-Psychology, 105,800; Engineering, 39,300; Geology, 22,200; Health Sciences, 128,000; Library Science, 8,000; Mathematics, 25,600; Music, 46,900; Physics, 24,700; and Zoology, 22,300.

The Law Library, which is administered by the College of Law, contains 212,000 volumes.

Special Resources
Main Library facilities include microfilm reading rooms; listening rooms for collections of recorded drama, poetry and speech; seminar and conference rooms; a map center; carrels for graduate students; and individual study rooms for faculty members engaged in research. Other services include the reserved book stations for undergraduate students in the Burke and Quadangle 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 Leigh Hunt Collection, brought together by Luther A. Brewer of Cedar Rapids, Iowa, is considered one of the most complete in existence. It contains 2,398 separate volumes; 1,966 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 Ranney Memorial Collection contains approximately 3,700 volumes, of which 3,000 were bequeathed to the University by Mrs. Ranney in memory of her husband, former a lecturer in the College of Medicine. The collection is particularly rich in deluxe editions, including many superb bindings made especially for Mrs. Ranney.

The John Springer Collection of books on typography was given to the University by John Springer, a long-time Iowa City printer. The collection includes 1,850 volumes containing type specimens, books important in printing history and volumes illustrative of the art and progress of printing through the centuries.

The "Ding" During Collection comprises originals of nearly 6,000 caricatures in which for more than 40 years Ding recorded and commented on the economic, political and diplomatic affairs of the United States. His caricatures are a pictorial history of this country during the first half of the 20th century. A subject index to the collection enhances its usefulness for reference and research.

The Bollinger-Lincoln Collection, gathered by Judge James W. Bollinger of Davenport, Iowa, consists of about 4,060 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 Blumh-Collection comprises approximately 305 volumes of poetry, biography and criticism, and 630 manuscripts or letters relating to the contemporary English poet Edmund Blunden.

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

The Iowa Authors Collection includes approximately 5,487 books written by Iowans and more than 470 manuscripts.

The "X" Collection is a gathering of 14,722 early rare or special works on diverse subjects, including books of the 13th and 16th centuries, early American, Roxburghe Club Publications, private press books and selected modern first editions.

The Manuscript Collection includes more than 6,000 individually cataloged letters or manuscript items of English and American authors or historical figures, principally of the 18th and 19th centuries, in addition to 300 invented collections of paper, diaries and correspondence files relating to midwestern economic, political and agricultural history.

The Map Collection contains 59,700 maps, 60,376 indexed aerial photographs, and 1,845 atlases, gazetteers and related reference items.

The University Archives preserve materials relating to the history of the University. The University publications from 1855 to 1909, originally assembled by Dean Amos N. Cucurcius, is today supplemented by 488 film drawings of correspondence and records, 2,018 shelf-feet of records, papers and publications, and an extensive collection of photographs dating back to 1914.

Other special collections include the Harvey Ingham Collection of books dealing with the American Indians; the Levi O. 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 kites and kitespans; and the Chautauqua Collection donated by Harry P. Harrison, manager of the Redpath Bureau. The Chautauqua Collection contains several thousand letters and business documents descriptive of the Chautauqua movement.

Staff

Acquisitions: Barbara K. Giebaldt, head; Lawrence R. Gorman, Kathleen B. Wachsel.
Circulation: David D. Hudson, head; Susan Marks, browsing room librarian and reserved books librarian; Clara Hetson, head emeritus.
Government Publications: Carolyn W. Kohler, head; Frank T. Allen, Mary Lee Blaeser, Mary R. McHenry.
Reference: Julia Berling, head; Barbara I. Flynn, Rebecca L. Johnson, Dorothy M. Kastel; Ann M. Levenzahl, Lucia A. Marine, Ellen L. Palinur; Keith A. Ragen, Jean S. Schaal, Ada M. Stolz, Carla J. Wood.
Serials: Helen S. Clark, head; Ruth E. Christ, Jim E. Cole.
Anne-Marie Halvorson, Cherrime E. Lehman, Mary E. Memson, Marjorie O. Whitney.
Special Collections: Francis J. Polska, head; Richard S. Green, Robert A. McCown, Earl M. Rogers, Irene Scdell, emeritus.
Departmental Librarians: art, Helen L. Sifford; anthropology, Pauline L. Mann; business administration, Ruth E. Reep; Peter J. Hartford; education-psychology, Anne G. Evans, Dorothy M. Klein, Diana W. Stidum; engineering and mathematics, David S. Currie; geology, Vera J. Bacon; health sciences, Robert W. Cryder, Edwin A. Libman, Margaret R. Issacs, Linda A. Patter, Constance H. Tushill, Andrea Vanderbitt; library science, Sandra S. Ballasted; music, Rita B. Burton; physics and astronomy, Jack B. Walling.
Services for Students

Admissions and Registrar
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. The responsibility of this office includes foreign student admission counseling.

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

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 members of minority groups, low-income students and special-education students, this office provides assistance with special needs including requests for tutors, lecture notes, study sessions, financial aid and vocational counseling.

Veterans’ Services
Veterans, dependents of veterans, and servicemen are served as a part of the Office of Admissions and Registrar. The Veteran Affairs Office provides assistance, information and tutorial programs for veteran students. People with questions or problems related to Veterans Administration benefits or registration and study at the University should contact this office.

Other Services
Academic Affairs Office
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 advisors from the areas of their choice. Students in the professional colleges are advised by the college dean or their designated representatives. Graduate students are advised by their department heads and the Graduate College Dean. In addition, academic advisors also serve as general consultants to students, and refer those with special problems to the appropriate areas.

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 inclusion as part of the regular University curriculum. Anyone with an interest in a particular topic may set up a course with the help of Action Studies. The course is generally open to anyone who is interested in the course. Courses taken for no credit are free. Registration is charged for credit courses. Most of the courses in the Action Studies Program run concurrently with the regular University schedule. A catalog with course descriptions, times and meeting places is printed every semester. For more information, contact the Action Studies Office, 303 Jefferson Building.

Career Assistance
The University provides post-graduate employment services through the Educational Placement Office in the College of Education, the Engineering Placement Office in the College of Engineering, and the Career Planning and Placement Office, which serves all other colleges of the University. Career Planning and Placement also maintains a Career Information Resource Center, and has trained staff members available to help students explore career alternatives.

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.
Dental Service
The University of Iowa College of Dentistry is primarily a teaching clinic. The purpose of which is to educate and train dentists. All employees of the University and all students who are registered at the University may receive dental treatment at the College and will be accorded the same opportunity for treatment as any other patient. However, the College of Dentistry is not affiliated with the University Student Health Service and does not render service under the Student Health Hospitalization Fund. Fees are established for all treatment rendered and patients are to pay cash or use their Master Charge cards.

Evaluation and Examination Service
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 examination. It also helps faculty or student groups which have particular project requests, such as question or course evaluation. Additionally, Evaluation and Examination Service conducts institutional research projects and provides consulting services on questionnaire and survey design.

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 Test, Medical College Admission Test, Graduate Record Examination, Admission Test for Graduate Study in Business, Graduate School Foreign Language Test, Law School Admission Test, Test of English as a Foreign Language and National Teacher Examination.

Health Service
The Student Health Service, including the clinic and infirmary service, is located in the Children's Hospital in the University medical complex. All registered students at the University are eligible for outpatient care in the Student Health Clinic, which provides complete primary medical services. Students in the student patient care is provided to students requiring medical supervision and nursing care. There is a daily charge for infirmary nursing care, and there are fees for laboratory tests, x-rays, etc.

All students are advised to be covered by health and accident insurance. If such coverage is not available under existing family or group plan policies, a University-approved group plan insurance is available for individual students or as a family plan covering students and dependents.

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

International Education and Services (OIES)
The OIES assists American students who wish to study, travel or work abroad, and foreign students who attend the University.

The OIES houses an Overseas Opportunities Center, staffed by a professional adviser. The center also houses a comprehensive and experienced staff of specialists in all areas of study abroad programs (including several programs sponsored by The University of Iowa). The foreign university catalogues, travel opportunities, hostels, itinerary, traveling, etc. In addition to being the Overseas Opportunities Center, the OIES has information about many scholarship and fellowship programs involving international education. The information is available at the OIES office.

The OIES operates the International Center, which students, faculty members and Iowa City community individuals and groups use for meetings, meals and activities that have an international focus.

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

Orientation Office
With the aid of representative student, faculty and staff personnel, the Orientation Office designs and conducts a wide variety of programs to help new students—freshmen, transfers and graduate students—acclimate to the way to and into the academic area, regarding services and facilities available to them, and in all other aspects of student life in the University community.

Reading Lab
The Reading Lab of the Academic Program provides individualized instruction for any University students who wish to improve their college-level reading. Students are asked to specify which reading problems they have, and the teachers in this program help each student work on skills such as word attack, vocabulary, comprehension, critical reading, and increased rate of reading.

Two enrollment categories are offered: voluntary reading courses, which meet twice a week at scheduled hours for 12 weeks; students may attend more or less often if they wish, and may enroll at any point during that time if they feel they need reading help. This Lab carries no credit and is
sign on grade; ordinarily no outside assignments are given; week is restricted to the Lab hours, and makes extensive use of Lab materials and the students' own texts in other courses. Speeded Reading is taught twice during the semester, four times a week for six weeks. It is also a volunteer course without credit or grades. Students are expected to read regularly, and work on eye-span and scanning exercises; reading films and timed reading exercises, both with comprehension tests; pacer practice, and rapid reading practice outside class. Pre and post-tests are given. Students learn to vary their rate according to the difficulty of material and purpose for reading, and retain effective comprehension.

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 activities as karate, tennis, golf, archery, 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, billiards, speedball, tennis, fencing and jogging.

Religious Opportunities

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

Speech and Hearing Clinic

The University of Iowa Speech and Hearing Clinic provides services for speech and hearing problems. The Clinic is staffed by faculty and students of the Department of Speech Pathology and Audiology. Any University student may receive needed services without charge. Services include diagnostic examinations, consultations, individual clinic sessions, group sessions and referrals to other clinics as needed.

Writing Lab

The Lab's purpose is to help people—from entering freshmen to doctoral candidates—who are encountering problems in writing. Learning and teaching evolve from the student's own writing and from student-teacher conferences about that writing. However, the Lab is not to help people write papers to please certain professors, but to help them learn to deal with the writing situations they may encounter in all their academic and professional work.
College of Liberal Arts

Administrative Staff

Dean: Donald Bernard Stull
Assistant Dean and Director, Admissions Office: Hugh Hulco
Associate Dean: Sherwood Z. Turtel
Director of Honors: Andrew V. Vitali
Appiah: Director of Honors: J. Richard Welsmith

The central objective of the College of Liberal Arts is to provide an environment which will encourage the student in the fullest possible development of his or her capabilities. Through its curriculum and related activities, the College seeks to ensure that its students acquire basic competence in communication skills and quantitative thinking; guide its students toward familiarity with the principal ideas, facts and works seminal in the various fields of natural and social science, language and literature, fine art, history and philosophy; and works to provide its students with experiences conducive to their development of resourceful and independent minds, strength of character and sense of personal responsibility.

The College of Liberal Arts had its beginnings in the chartering of the University in 1637. It now enrolls more than three-fourths of all the University’s undergraduate students, provides faculty and facilities for a majority of the University’s advanced degree programs and, in addition to supportive and major coursework for Liberal Arts programs, provides preparatory coursework for undergraduate programs offered by other colleges of the University.

Degrees Offered

- Afro-American Studies, B.A. (in American Civilization)
- American Civilization, B.A.
- Anthropology, B.A.
- Art and Art History, B.A., B.F.A.
- Astronomy, B.A.
- Biochemistry, B.A., B.S.
- Biology, B.A.
- Chemistry, B.A., B.S.
- Classics, B.A.
- Dental Hygiene, B.S.
- East Asian Languages and Literature, B.A.
- Economics, B.A., B.S.
- Elementary Education*, B.A., B.S.
- English, B.A.
- European Literature and Thought, B.A.
- French, B.A.
- General Science*, B.A., B.S.
- General Studies*, B.G.S.
- Geography, B.A., B.S.
- Geology, B.A., B.S.
- German, B.A.
- Greek, B.A.
- History, B.A.
- Home Economics, B.A., B.S.
- Italian*, B.A.
- Journalism, B.A., B.S.
- Latin, B.A.
- Letters, B.A.
- Linguistics, B.A.
- Mathematical Sciences (includes Computer Science and Statistics), B.A., B.S.
- Medical Technology, B.S. (in General Science)
- Microbiology, B.S.
- Music, B.A., B.M.
- Nuclear Magnetic Technology, B.S. (in General Science)
- Physical Education for Men, B.A., B.S.
- Physical Education for Women, B.A., B.S.
- Physical Therapy, B.S. (in General Science)
- Physics, B.A.
- Political Science, B.A.
- Portuguese, B.A.
- Psychology, B.A., B.S.
- Recreation Education, B.S.
- Religion, B.A.
- Russian, B.A.
- Social Studies, B.A.
- Social Work, B.A.
- Sociology, B.A., B.S.
- Spanish, B.A.
- Special Education, B.A., B.S.
- Speech and Dramatic Art, B.A.
- Speech and Hearing Science, B.A., B.S.
- Zoology, B.A.

No degree is awarded in secondary education. Prospective teachers meet state requirements and minimum course requirements in education and complete a departmental major, and are certified by the University to teach subjects at the secondary level.

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
- Elementary Education and Geology
- 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 in the College of Liberal Arts. The Division of Fine Arts includes the School of Art and Art History, the School of Music and the Department of Speech and Dramatic Art. The Division of Mathematical Sciences includes the departments of Computer Science, Mathematics and Statistics. The School of Letters is a federation of the departments of Classics, East Asian Languages and Literature, English, French and Italian, German, Linguistics, Russian, Spanish and Portuguese, and Speech and Dramatic Art; the programs in Afro-American Studies, American Civilization, Comparative Literature and Modern Letters, the International Writing, Translation and Writers Workshop, and the Windhover Press. These are also schools of Journalism, Literary Science, Religion and Social Work.

Basic Program

Except for the degree Bachelor of General Studies, the basic program for baccalaureate graduation from the College of Liberal Arts consists of:

- General Requirements
  - Core areas
    - Historical-cultural literature
    - Natural science
    - Social science
    - Foreign language
    - Mathematics
    - Physical education skills
    - Rhetoric skills
  - Area of Concentration (major)

Electives

Typically, the student takes about one-third of his or her course work in each of these three groups, focusing on the general requirements the first two years and on the area of concentration during the junior and senior years. The general requirements, and methods of meeting them, are explained in detail at the end of this section.

Bachelor of General Studies

The program leading to the Bachelor of General Studies degree provides for three areas of concentration, rather than the traditional single major. Of the general requirements listed above, only the rhetoric skills requirement applies to the General Studies program. For the General Studies degree, the student must earn at least 45 semester hours of credit in University courses numbered above 99, and must achieve at least a 2.0 grade-point average in these courses. No more than 30 credits earned in one department can be applied toward graduation.

Two or More Bachelor's Degrees

Students who have earned a bachelor's degree and who wish to qualify for an additional bachelor's degree must complete at least 30 additional hours of study in residence for each degree.

Double Majors

Students may meet the major requirements in more than one department; and if both departments award the same degree the student may earn a bachelor's degree with two majors, e.g., B.A. in History and English; B.S. in Psychology and Sociology. No double majors can be the dual-endorsed by the University.

Credit Requirements

Graduation from any College of Liberal Arts baccalaureate program requires a minimum of 124 semester hours of college credit, of which at least 90, or the last 30, or 45 of the last 60, must be earned in residence in the College.

Maximum Credit in One Department

No more than 50 semester hours of credit earned in one department may be applied toward College requirements for the Bachelor of Arts or Bachelor of Science degrees.

Transfer Credit Limit

No more than 62 semester hours of junior college transfer credit may be applied toward College requirements for baccalaureate graduation.

RTO Credit Limit

No more than eight semester hours of credit earned in Reserve Officer Training Corps courses may be applied toward baccalaureate graduation from the College.

Credits for Graduate Courses

Undergraduate students in the College must obtain the specific approval of the appropriate departmental executive officer and the dean of the College to register for courses numbered above 199 and to include such courses in an undergraduate program.

Correspondence and Extension Credits

No more than 30 semester hours of credit earned in correspondence or extension courses may be applied toward College requirements for baccalaureate graduation.

Classification

Freshman: less than 28 semester hours earned Sophomore: 28 through 53 semester hours earned Junior: 54 through 89 semester hours earned Senior: more than 89 semester hours earned

Semester Load Limit

The normal semester is 15-16 semester hours for a semester, eight for a summer session. No student may register for more than 19 semester hours in one semester, or nine in a summer session, without the permission of the Liberal Arts Advisory Office.

Academic Standards

Marking System

The College uses the 4-point marking system, in which grade points are awarded on a scale descending from A = 4. For a full description, see the General Information section of the Catalog.
Grade-Point Requirements for Graduation

A minimum of 124 semester hours of college-level credit is required. All work attempted must be of college-level difficulty. At least 30 semester hours of credit must be earned at the University of Iowa. A minimum of 40 semester hours of credit must be earned in residence, with at least 28 semester hours of credit being earned during the senior year.

Good Standing

Minimum University of Iowa and overall cumulative grade-point averages required 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.

Pass-Fail Option

All students in the College have the option of taking courses on a pass-fail basis, under these conditions:

- The student must have the consent of his or her faculty advisor and the course instructor, and must file a completed pass-fail card either during Registration or at the Registrar's Office before the end of the third week of classes (second week in a summer session).

- Students admitted as beginning freshmen after May, 1974, or not graduated by July, 1977, may apply no more than 16 semester hours of "pass" credit toward satisfaction of the 124-credit graduation requirement, and may earn that credit only in elective, physical education skills, mathematics skills (2286:1) and/or elective courses.

- For transfer students admitted after May, 1974, with less than 56 semester hours of transfer credit, the "pass" credit limit is also 16; for those with more than 55 semester hours of transfer credit, the "pass" credit limit is eight.

- Students admitted as beginning freshmen before May, 1974, and students graduating by July, 1977, may apply no more than 32 semester hours of "pass" credit toward the graduation requirement, with the added condition that credit earned in courses offered on a satisfactory-fail basis (see below) count toward the "pass" credit limit.

- Transfer students admitted before May, 1974, with less than 28 semester hours of transfer credit may apply a maximum of 32 semester hours of "pass" credit toward graduation; with 28 to 55 semester hours of transfer credit, a maximum of 24 semester hours of "pass" credit; with 56 to 89 semester hours of transfer credit, a maximum of 16 semester hours of "pass" credit; and with 90 or more semester hours of transfer credit, a maximum of eight "pass" credit. Credits earned in satisfactory-fail courses are considered part of the "pass" credit limit.

- A student may not take courses in his or her major department on a pass-fail basis.

"Fail" grades in pass-fail courses are included in the computation of grade-point averages.

Satisfactory-Fail Courses

Certain courses are offered only on a satisfactory-fail basis. No more than 16 semester hours of credit earned in such courses may be applied toward graduation. A student may take satisfactory-fail courses in his or her major department. No special form is required for satisfactory-fail registration. "Fail" grades in satisfactory-fail courses are included in the computation of grade-point averages.

Second-Grade-Only Option

If a student repeats a University course during his or her next term in residence or during the next term in which he or she is enrolled, only the second grade and credit are included in computation of the student's grade-point average. This option requires permission of the dean, and the filing of a completed approval form.

Incomplete and No Report

A mark of "I" (incomplete) or "N" (no report) which is not replaced by final grade prior to the announced deadline within the student's next regular semester of registration will be replaced by a final grade of "F".

Readmission After Academic Dismissal

A student dropped from the College for the first time for failure to meet academic requirements may apply for readmission after one year. A student dropped for a second time may not apply for readmission until five years later.

Recognition for Academic Achievement

The College awards degrees "with highest distinction" to students in the highest 2 percent of the graduating class; "with high distinction" to students in the next highest 3 percent; and "with distinction" to students in the next highest 5 percent. Ranking is based on students' grade-point averages for all college-level study undertaken prior to their final registration.

The College also awards degrees "with honors" to students who have satisfied the requirements for an Honors major, receive departmental recommendation, and are approved by the College's Honors Council and dean.

To be eligible for either form of recognition, the student must take his or her final 30 semester hours of study in the College, and must have completed at least 45 semester hours of study in the College before his or her final registration.

Dean's List

Liberal Arts students achieving grade-point averages of 3.5 or above in 12 or more semester hours of graded coursework during a given semester are recognized by inclusion on the Dean's List for that semester.

Special Programs

Advanced Placement

Under the Advanced Placement Program of the College Entrance Examination Board, a high school senior may take college-preparatory 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.

Advanced Standing in English

An entering student who has had the type of high school preparation sponsored by the Advanced Placement Program in English qualifies to attempt to meet the College of Liberal Arts rhetoric requirement with credit by taking the rhetoric proficiency examination offered before the course begins. At least two weeks
Credit by Examination
A student may earn up to 32 semester hours of credit, and/or course exemption, in the general education program of the College, or in certain introductory departments courses, through tests offered in the College-Level Examination Program (CLEP) of the College Entrance Examination Board. Information about the tests and permission to take them may be obtained from the Liberal Arts Advisement Office.

Foreign Studies Certificate
The College’s Foreign Studies Certificate program is designed for undergraduate students who seek to broaden their knowledge of societies other than their own. The program is a supplement to and not a substitute for a major. The chairmen of the various language departments serve as advisers to students preparing for the certificate. After selecting an area or country of interest, students wishing to earn the certificate will be guided by the appropriate chairman in choosing a group of courses designed to provide a basic understanding of the area or country. Courses may include work in geography, history, anthropology, art, literature, political science or other fields offering international studies.

Programs leading to the certificate will include at least 18 semester hours in coursework related to the chosen area or country. In addition, students fulfill the foreign language requirement for the B.A. in a language appropriate to the chosen country or area. A student who successfully completes a Foreign Studies course program designed by the appropriate departmental chairman receives the Foreign Studies Certificate with his or her degree.

Interested students should consult the chairman of the appropriate department:
- Classics (Ancient Greece or Rome)
- East Asian Languages and Literature (India, China or Japan)
- French and Italian (France or Italy)
- German (Germany or Austria)
- Russian (Russia or Eastern Europe)
- Spanish and Portuguese (Spain, Portugal or Latin America)

Honor
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 majors do not 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 Honors Programs are invited to participate. However, the Program is open to all interested and qualified students.

Preprofessional
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 colleges of Medicine or Dentistry, or the medical technology, physical therapy or dental hygiene programs, for which a bachelor’s degree is not an admission requirement, to obtain a bachelor’s degree from the College of Liberal Arts upon successful completion of one academic year in the professional college or program.

Admission Requirements
To qualify for admission to the College of Liberal Arts, the applicant must meet the College requirements outlined below, as well as any special requirements for the program of his or her choice.

Entering Freshmen
An applicant seeking admission as an entering freshman must have the high school from which he or she graduated provide a certificate of high school credits, including a complete statement of high school record, class rank, scores on standardized tests and certification of graduation. An applicant who is unsatisfactorily limited 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 entire record and at the discretion of the admissions officer, may be admitted unconditionally, admitted on probation, required to enroll for a trial period during a preceding summer session or denied admission.

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

A graduate of a nonapproved high school must submit all data required above, and must take examinations which demonstrate his or her general competence to do college work and provide evidence of specific competence for admission to a given curriculum.

Undergraduate Students Transfer 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 recommendations 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 at-

tended. The applicant must also submit any other records or let-
ters the college may require to support his or her application for
admission.

A transfer applicant is expected to have maintained a C aver-
age (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 examina-
tions. An applicant who successfully completes the examina-
tions may be admitted to probation.

In general, transfer applicants under academic suspension
from the last college attended will not be considered for admis-
sion during the period of suspension or, if suspended for an in-
definite period, will not be considered until six months have
elapsed since the last date of attendance. When eligible for con-
sideration 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 applicant from a stu-
dent 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 pro-
bation, and his or her admission will be subject to cancellation.

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 ordinarily be a full academic year. The College will stipulate
in writing the terms of the validation at the time of provisional admission. Each student from a nonaccredited col-
lege is considered on his or her merits, and admission or rejec-
tion is at the discretion of the admissions officers.

Liberal Arts Advisory Office

The Liberal Arts Advisory Office functions as an integral part
of the Office of the Dean of Liberal Arts.

Every undergraduate student enrolled in the College has an
academic advisor, selected from the faculty, to help the student
with registration and the progressive development of the educa-
tional program which will best prepare the student to pursue his
or her life goals. Faculty advisors are assigned by the Advisory
Office. Students who have declared majors are assigned advisors
from their major departments; those who have not declared ma-
ors are assigned advisors from the Liberal Arts faculty at large;
those in pre-professional programs are assigned special advisors
from the appropriate professional areas.

Students should go to the Advisory Office to change faculty
advisors, declare or change majors, determine the advisability of
their taking tests in the College-Level Examination Program (the
Advisory Office administers CLEP for the College and assigns
credit for satisfactory CLEP scores) and determine their eligibil-
ity to use the Secured Grade Option; for information and/or
advice about College requirements for graduation, pass/fail and
satisfactory/fail, concerning deadlines for various administrative
actions (such as dropping courses, adding courses, canceling
registration) within the College; for information about the Bach-
elor of General Studies degree programs; and concerning prob-
\enny, dismissal, re-enrollment, academic discipline and any other
academic matter.

General Requirements

(See: Graduation from an accredited junior college with an
A.A. or A.S. degree satisfies all College graduation require-
m ents outlined below, except the foreign language requirement.)

Core Requirements

There are four core areas: historical-cultural studies, literature,
natural science and social science. All students may satisfy the
Core requirements by earning in each core area eight semester
hours of credit in core courses offered in that area, or in depart-
mental courses approved for core purposes.

With the approval of his or her major department, a student
may be excused from the core requirement in the area of his
major. Exemption may also be granted on the basis of a com-
prehensive examination or a College-Level Examination Pro-
gram test on the core subject.

Except in literature, core courses may be taken as electives.

Core courses and approved departmental options in the four
core areas are as follows:

Historical-Cultural Studies

(Teacher students may meet the requirement in this core area
with eight semester hours of transfer credit in core-equivalent
courses in history, philosophy, religion, American civilization,
or art, music or drama history and appreciation.)

1129 Problems in Human History
4 s.h.
1139 Problems in Human History
4 s.h.

Introduction to learning about past and its meaning for present; various topics in
world history; emphasis on methods of investigating and bringing ideas about his-
tory. An as soon as possible evaluation of your basic learning skills will be provided
for each student.

1135,128 Western Civilization
4 s.h.

1135,128 Western Civilization
4 s.h.

1135,128 Western Civilization
4 s.h.

1135,128 Western Civilization
4 s.h.

Evolution of Western civilization with emphasis on political, social, economic and

1125 Philosophy of Man
4 s.h.

Philosophical consideration of man and his place in society.

1136 Religion in Western Culture
4 s.h.

1136 Religion in Western Culture
4 s.h.

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Literature
Satisfaction of the rhetoric skills requirement (see below) is prerequisite to registration for core coursework in literature.

The literature core requirement may be satisfied by completion of 11:1 The Interpretation of Literature and one other core course.

All core courses in literature ask for substantial independent reading and writing as a tool for learning and communication. Readings are selected from the present as well as the past. Courses emphasize both the artistic structures and the personal and social implications of literary works.

Detailed course descriptions and book lists are posted in the English-Philosophy Building.

(Transfer students may meet the literature core requirement with six semester hours of transfer credit in literature, or with three semester hours of transfer credit and four semester hours of University credit in literature.)

11:1 The Interpretation of Literature 4 s.h.
This is a broad and essential element in literature.

11:2 Biblical and Classical Literature 4 s.h.
Selections from Old and New Testament literature, Homer, Greek democracy, Virgil, and Virgil.

11:3 Medieval and Renaissance Literature 4 s.h.
Hein, Chaucer, Shakespeare, Milton and others.

11:4 Indo-European Literature 4 s.h.
Major representations of dialogic models of man's experience in narrative prose and verse from classical times to present.

11:5 The Idea of Culture 4 s.h.
Varieties of course of life past and present, including satire, burlesque, farce, romance, prose and verse.

11:6 Narrative Literature 4 s.h.
Interest in narratives as well as more developments in art of storytelling in both poetry and prose.

11:7 Lyric Poetry 4 s.h.
Poetry from early periods of development as well as contemporary verse, with emphasis on distinctive language and major formal patterns of poetry.

11:8 Literature of the Theater 4 s.h.
Selected plays from Shakespeare's time to present with some consideration of drama before and after in other genres.

11:9 American Lives 4 s.h.
Major works of American autobiography from Thoreau to the present.

11:10 French Literature of Commitment 4 s.h.
Material pertinent to the 19th and 20th-century French heritages, in English translation.

11:11 The Classical View 4 s.h.
Readings from Homer, Virgil, St. Augustine and Apuleius in English translation.

11:12 The Literature of the African People 4 s.h.
Same as American Civilization 401.

11:17 German Heroic and Erotic Literature of the Middle Ages 4 s.h.

11:18 Contemporary Latin American Narratives 4 s.h.
Themes and narrative techniques of major authors of the continent, in English translation. Same as Spanish 356.

11:19 Asian Humanities I 4 s.h.
Major authors in the cultures of traditional India and Confucian China in English translation. Same as East Asian Languages and Literatures 39:19 and School of Letters 101:19.

11:20 Asian Humanities II 4 s.h.
Reading in English translation of major authors of traditional China and Japan. Same as East Asian Languages and Literatures 39:20 and School of Letters 102:20.

Natural Science
(Transfer students may meet this core requirement with eight semester hours of transfer credit in core-equivalent courses in astrophysics, biochemistry, botany, chemistry, geology, mathematics, microbiology, physiology and/or zoology.)

Life Science
11:21 Human Biology 4 s.h.
Human evolution, anthropology, genetics and malnutrition failures of our body systems from inactivity or stress; our place in and with other species of earth.

11:22 Ecology and Evolution 4 s.h.
As an overview of directions of evolution and diversity of living things, their patterns on earth, their organization in natural systems and dynamics of evolutionary processes. Lecture, laboratory, independent. Independent of 11:21.

Earth History and Resources
11:23 Earth History and Resources 4 s.h.
Formation of rocks, recent evolution, exploration, landscapes, their management, earthquake, research-building, conservation, for non-science students. Lecture, laboratory. Not open to students who have had Geology 121, 123 or 125.

11:24 Man and His Physical Environment 4 s.h.
Chemical, air pollution, processes in natural environments, our energy resources and problems, environmental geology. Lecture, laboratory. For non-science students. Not open to students who have had Geology 121 or 123.

Physical Sciences
11:25 Chemistry and Physics of the Environment 4 s.h.
Chemistry and physical ecology of our planet: air, earth, water and other pollution, nature of pollutants to man, chemistry and physics of balance of nature; all direct and indirect processes of physics and chemistry at elementary level. For non-science students. Lecture, laboratory. Same as Chemistry 423 and Physics and Astronomy 29:3.

11:26 Technology and Man 4 s.h.
Development of the physical science from basic to modern research and applications, for non-science majors. Lecture, discussion, laboratory. Same as Chemistry 426.

Departmental Options
Any of the courses listed below may be used in any combination (except as indicated) with any other course on this or the above core list to satisfy the natural science core requirement. For descriptions of the departmental options, see the appropriate departmental sections of the Catalog.

Botany
2:1 Introduction to Botany 4 s.h.
2:11 Evolution of Land Plants 4 s.h.
2:12 Algae and Fungi 4 s.h.
2:13 Biology of the Local Flora 4 s.h.

Chemistry
4:1 Principles of Chemistry I 3 s.h.
4:7 General Chemistry I 3 s.h.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>22M:10, 11</td>
<td>Fundamentals of College Mathematics I, II</td>
<td>4 s.h.</td>
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<tr>
<td>20-1</td>
<td>College Physics</td>
<td>4 s.h.</td>
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<tr>
<td>29-17</td>
<td>Introductory Physics I</td>
<td>4 s.h.</td>
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<tr>
<td>29-2</td>
<td>College Physics</td>
<td>4 s.h.</td>
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<tr>
<td>29-18</td>
<td>Introductory Physics II</td>
<td>4 s.h.</td>
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<tr>
<td>29-3</td>
<td>Basic Physics (may not be combined with any other physics core option)</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>29-53</td>
<td>Modern Astronomy</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>29-61, 62</td>
<td>General Astronomy</td>
<td>3-4 s.h.</td>
</tr>
<tr>
<td>29-105</td>
<td>General Astronomy</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>37-3</td>
<td>Principles of Animal Biology</td>
<td>5 s.h.</td>
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<tr>
<td>44-1</td>
<td>Introduction to Human Geography</td>
<td>4 s.h.</td>
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<tr>
<td>44-12</td>
<td>Introduction to Social Geography</td>
<td>4 s.h.</td>
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<tr>
<td>44-19</td>
<td>Natural Environmental Issues</td>
<td>2 s.h.</td>
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<tr>
<td>44-30</td>
<td>Introduction to Economic Geography</td>
<td>4 s.h.</td>
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<tr>
<td>44-35</td>
<td>Introduction to Urban Geography</td>
<td>4 s.h.</td>
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<tr>
<td>30-1</td>
<td>Introduction to American Politics</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>30-2</td>
<td>Introduction to Politics</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>30-10</td>
<td>Introduction to Political Behavior</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>30-11</td>
<td>Introduction to Political Theory</td>
<td>4 s.h.</td>
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<tr>
<td>30-12</td>
<td>Introduction to Comparative Politics</td>
<td>4 s.h.</td>
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<tr>
<td>30-13</td>
<td>Introduction to World Politics</td>
<td>4 s.h.</td>
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<tr>
<td>50-100</td>
<td>The American Political System</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>31-1</td>
<td>Elementary Psychology</td>
<td>4 s.h.</td>
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<tr>
<td>31-3</td>
<td>General Psychology</td>
<td>4 s.h.</td>
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<tr>
<td>34-1</td>
<td>Introduction to Sociology: Principles</td>
<td>4 s.h.</td>
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<tr>
<td>34-2</td>
<td>Introduction to Sociology: Problems</td>
<td>4 s.h.</td>
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<td>Foreign Language Requirements</td>
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<td>The Bachelor of Arts degree requires at least two years of college-level study, or four years of high school study, or an equivalent combination of college-level and high school study or equivalent proficiency evidenced by examination, in one foreign language. The Bachelor of Fine Arts, Bachelor of Music and Bachelor of Science degree requires at least one year of college-level study, two years of high school study or demonstrated equivalent proficiency, in one foreign language.</td>
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<tr>
<td>60-1</td>
<td>Principles of Economics</td>
<td>4 s.h.</td>
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<tr>
<td>60-2</td>
<td>Principles of Economics</td>
<td>4 s.h.</td>
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The instructional program in physical education skills provides for a wide variety of activities: archery, badminton, ballet, bowling, canoeing, climbing, fishing, gymnastics, handball, jaquet, luge, racquetball, modern dance, modern dance, pool, racquetball, recreational games, relaxation, riding, rhythmic gymnastics, roller skating, rugby, self defense, soccer, swimming, softball, squash, squash, swimming, table tennis, tennis, track and field, trampoline and tumbling, volleyball, water polo, weight training, wrestling. The program also gives the students an opportunity to correct physical defects which result from therapeutic exercises.

Students who have passed their 23rd birthday prior to admission are excused from the physical education requirement. Students who present evidence of having completed a basic training program in some branch of military service are excused from the requirement. Transfer students must meet the requirement with four semester hours of transfer credit in physical education, or with two semester hours transfer credit in physical education and two semester hours of University physical education skills credit. Transfer students admitted to the University with more than 40 semester hours of transfer credit are excused from the requirement.

Physical Education Skills for Men

10:24-26 Physical Education Skills 4 a.h. Each semester foundation of physical education activities, coordination and control in sports skills, orientation to sports activity and physical conditioning. Required of all male students to Liberal Arts who are unable to satisfy written and proficiency examination in sports skills and physical conditioning.

10:28-30 Physical Education 2 a.h. Open only to students who also take physical education without credit.

Physical Education Skills for Women

10:24-26 Physical Education Skills 1 a.h. Introduction to selected activities from the areas of dance, dance, games and sportsmanship, emphasis on participation principles.

10:28-30 Physical Education 2 a.h. Open only to students who also take physical education without credit.

Rhetoric Skills Requirements

The College of Liberal Arts requires all entering undergraduate students to enroll in rhetoric coursework until they achieve a satisfactory level of competence in oral and written communication: proficiency in investigating, analyzing, evaluating and responding to the ideas, beliefs and attitudes of other writers and speakers, and proficiency in the responsible use of various sources of information and ideas.

Rhetoric assignments are based on American College Testing scores. Most entering freshmen are assigned either to the two-semester, eight-credit sequence, 101-2, Rhetoric, or to the one-semester, four-credit course, 103-3 Rhetoric.

Students initially assigned to and registered for 103, 104, 362-398, 103-3 Rhetoric, or 103-3 Literature and Composition I may exempt from all or part of the rhetoric requirement, and earn two or four semester hours of credit, by taking the writing and/or speech tests offered during the first week of the semester.

Rhetoric classes begin with student performances which serve as placement indicators. Students in 103 who demonstrate above average reading speed and comprehension and above average writing skills may be advised to switch to 103, for example.

Students whose entry week indicates a need for individualized instruction beyond their coursework may enroll for zero-credit work in the Rhetoric Program. Some students may be advised to switch to 104, a one-semester, two-credit course of individualized instruction in reading, or to 105, a one-semester, two-credit course of individualized instruction in writing.

No more than eight semester hours of rhetoric credit may be counted toward baccalaureate requirements.

(Transfer students may meet the rhetoric requirement with eight semester hours of transfer credit in comparable course work, or with six semester hours of transfer credit in composition and two in speech. Students who partially satisfy the requirement with transfer credit may be assigned to 102-2, 103-3, 105 or 362-398. Students admitted to the University with 40 or more transfer credits are excused from the rhetoric requirement.)

Rhetoric Courses

101 Rhetoric 4 a.h. Instruction and practice in speaking, writing, and critical reading with the focus on expository and critical essays; emphasis on reading, organizing, and developing ideas; general theory courses for empathy and supporting ideas; emphasizing discussion in poems, stories, and dramas.

103 Rhetoric 4 a.h. Continued instruction and practice in expository and critical writing with the focus on critical thinking, research and interpretation; development of expository and critical essays; emphasis on the support of ideas; development of expository essays; emphasis on conciseness and clarity; and selection of appropriate matter; emphasis on methods and techniques of research, and the use of language in critical essays and speeches, and a research paper.

102 Rhetoric 4 a.h. Instruction and practice in speaking, writing, and critical reading with the focus on expository, critical thinking, research and argumentation; emphasis on language and techniques of research; emphasis on methods and techniques of research; selection of appropriate matter; emphasis on methodological and interpretative essays, and a research paper.

103 Rhetoric 4 a.h. Instruction and practice in speaking, writing, and critical reading with the focus on expository, critical thinking, research and argumentation; emphasis on language and techniques of research; emphasis on methods and techniques of research; selection of appropriate matter; emphasis on methodological and interpretative essays, and a research paper.

Cross-listed as English 815 for students in the College of Engineering.

104 Rhetoric 4 a.h. Instruction and practice in expository composition only. See 103 for focus and emphasis.

105 Rhetoric 2 a.h. Students with major difficulties with college-level reading work in courses that provide intensive, individualized, work through the course. Through major assignments consisting of outstanding literature, reading, analysis, and problem solving, the student is encouraged to develop efficient reading and study habits, critical thinking, research and writing skills, and to demonstrate an ability to understand and analyze material in any other course.

107 Rhetoric 2 a.h. Engaged the student in writing that communicates with a teacher, who responds to the writer's ideas, thus focusing on particular problems as they occur in the writer's ideas, focusing on particular problems as they occur in the student's ideas. Further students are advised not to engage in the rhetoric course.

Afro-American Studies

Program Chairmen: C. M. T. Turner

Departmental Officers: A. L. L. L. S., M. D., Ph.D. (American Civilization, with concentration in Afro-American Studies)

The Afro-American Studies Program focuses on the study of people of African descent in the North American colonies and the United States of America from the 17th century to the present. Although the Program presently emphasizes history and literature, it is recognized that knowledge and understanding of
black Americans will be incomplete if the study is restricted to the perspective of any single discipline. For that reason, the Afro-American Studies Committee engages in a continued effort to expand the perspectives by developing courses which will foster the knowledge drawn from many disciplines in the humanities and social sciences. In addition, because of the concern for a comprehensive rather than narrow study of Afro-Americans, the Program also examines their African heritage and their present relationships to Africans in other lands.

The Program originated in 1969 in courses intended to foster awareness of the role Afro-Americans have taken in the development of the United States and to promote understanding of the present conditions and concerns of black Americans. Subsequently, these programs have been organized into undergraduate and graduate curricula which permit a concentration of Afro-American studies in programs leading to a B.A., M.A., or Ph.D. in American Civilization. While the original purposes of the Afro-American courses are not being neglected, the new curricula prepare students to teach Afro-American studies, to train other scholars, to undertake the scholarly research needed in the field, and to organize and administer educational programs in Afro-American Studies. Although most of the students in the Ph.D. program are preparing to work in colleges and universities as teachers and administrators, the B.A. and M.A. programs provide valuable backgrounds for many other students seeking careers in community work, public school teaching, religion, government, and political science. In short, the Afro-American Studies Program offers training important to any individual whose future career will require understanding and knowledge of black Americans.

Undergraduate Study

Graduate Programs
The Master of Arts Program
The Master of Arts program is designed both for the individual who does not expect to earn any additional degrees and for the individual who plans to study for a doctorate. General requirements for the Master's are listed in the American Civilization section of this catalog. The concentration in Afro-American Studies in the M.A. program is designed in consultation with the student's advising committee and approved by the American Civilization executive committee. A thesis is not required in the program.

The Doctoral Program
The doctoral program in American Civilization with concentration in Afro-American Studies is intended primarily for individuals who expect to assume roles in universities and colleges as teachers of Afro-American Studies and as directors of Black Studies programs. Such individuals are also prepared as research scholars. The program blends formal coursework and independent study.

Curriculum Requirements
The minimum requirements for a Ph.D. in American Civilization with concentration in Afro-American Studies are 72 semester hours of coursework, including a thesis. Of the 72 hours, at least 30 must be in Afro-American Studies. In addition, the student must complete a minimum of 9 semester hours in each of three cognate fields, including American Civilization. One of these cognate fields may be a branch of Afro-American Studies. American Literature and Intellectual History of America are frequently selected as cognate fields.

In addition to the required coursework specified above, the student completes his or her program with a thesis and with electives, generally selected from Afro-American Studies or from the cognate fields.

Language/Tool Requirements
Each student in the program must demonstrate, by examination or coursework, competence in one foreign language. In addition, each student must demonstrate competence in a tool subject by taking 45:191 Introduction to American Civilization and 45:211 Introduction to Research in Afro-American Culture, both of which offer instruction in methodology.

Comprehensive Examinations
By the end of the sixth semester of graduate study at the University, a doctoral candidate should have taken a comprehensive examination. This examination, which is both written and oral, consists of four areas: Afro-American Studies, American Civilization, and two cognate fields, one of which may be a branch of Afro-American Studies.

Thesis
Each doctoral candidate must complete a thesis requiring original research in some aspect of Afro-American culture, and must successfully defend the thesis before a faculty committee.

Admission
In addition to satisfying the requirements of the Graduate College for admission to graduate study, a student must have an appropriate educational background in literature and the social sciences. A student may be asked to take, without credit toward his graduate degree, courses needed to remedy any deficiencies in his undergraduate preparation.

Co-Curricular Activities Related to Afro-American Studies
Black Kaleidoscope
Each year the Afro-American Studies Program attempts to promote knowledge and consciousness within the on-campus and off-campus community by sponsoring Black Kaleidoscope, a series of lectures and demonstrations by scholars and artists distinguished in Afro-American culture.

Institute in Afro-American Culture
Since 1964 The University of Iowa each summer has served as host for an Institute in Afro-American Studies for college and university teachers. The institutes, which bring renowned artists and scholars to the campus, have focused on such topics as the Harlem Renaissance, Richard Wright, W.E.B. DuBois, black
American theatre, and slave narratives. Although students in residence at the University are not eligible to be official members of the faculty, they are permitted to enroll in a three-credit hour course which is offered at the same time as the Institute and on the current year's topic.

Black Action Theater
A co-curricular activity which is academically sponsored through the Afro-American Studies Program, Black Action The-ater offers participants an opportunity for instruction and expe-rience in theatrical productions of plays by black authors.

Afro-American Cultural Center
The Afro-American Studies Program encourages participation in the activities of the Afro-American Cultural Center. The Center serves as a museum and library for educational and cultural art-ifacts and exhibits of black culture. Thus, it provides cultural en-richment for black people of the Iowa City community and a cultural meeting place for black students. It also attempts to promote a knowledge of black culture which will improve inter- racial understanding among all members of the University com-munity.

Black Genesis Trope
The Afro-American Studies Program also encourages participa-tion in Black Genesis Trope, a student organization which blends dance, music, poetry and visual arts in representations of black culture and history.

Faculty
Because the Afro-American Studies Program is interdisciplinary, it calls upon the services of faculty members from various de-partments. The faculty members who in 1973-74 served on the Afro-American Studies Steering Committee and/or assisted in- struction in Afro-American Studies are: Dewain T. Turner (Bio-philosophy), William Fox (Sociology), Leo Davis (Chemistry), Sydney James (History), Alexander Kern (American Civiliza-tion, Irving Kovarsky (Business), James Lincoln (Director, Af-ro-American Cultural Center), Tad McNabini (Music), Michael McNally (Geography), Douglas Midgley (Anthropology), Wil-son Morse (History), Peter Nastaren (International Writing) and Predict Woolard (English).

Courses
Afro-American Studies and Related Areas
4619 Black Poetry Workshop 3 s.h.
A survey of black American poetry, beginning at its roots in folk music and spirituality, moving through several periods, such as the Harlem Renaissance and Post-Renaissance and ending finally to the 1960s and the Black Arts Movement. Discussion and criticism of poems selected by the class. Open to undergraduates only.

4611 Contemporary Black Experience 3 s.h.
Review and discussion of several volumes or images of the contemporary black experience. The framework of the class will be lectures and discussion, with bibli-ography materials provided on request. Open to undergraduates only.

4605 Introduction to Afro-American Culture: A Historical Approach 3 s.h.
This course attempts a complete survey of black history, including the history of Africa south of the Sahara, from ancient times to the present day, and the history of the United States. The emphasis is on United States history. Open to undergraduates only. Same as History 16:60.

4616 African Art: An Approach 3 s.h.
An introduction to the culture of Africa in the United States with emphasis on significant characteristics of their music, art, literature and philosophy. Open to undergraduates only.

4615 African Drama 3 s.h.
An examination of drama by contemporary Africans. The reading list includes plays for staging, one-act plays, radio plays and other works which illustrate the development of modern drama in Africa today. Open to advanced undergraduates and graduate students.

4613 Africans in the New World 3 s.h.
A social and cultural history of black populations in the New World. Areas and topics emphasized will depend on the instructor. Open to advanced undergraduates and graduate students. Same as Anthropology 135:112.

4614 Race and Ethnic Relations 3 s.h.
A multidisciplinary study of group relations. Special emphasis is given to soci- al, historical and political issues in the study of American minority groups. Open to advanced undergraduates and graduate students. Same as Sociology 35:15, Anthropology 135:105.

4610 Afro-American Literature I 3 s.h.
An examination of literature by contemporary Africans. The works will be presented in relation to social, cultural and historical influences. Among the authors to be studied are John Holland, W.E.B. DuBois, Paul L. Dunbar, Charles Chestnut, Claude McKay, Jean Toomer, Charles Willson and Langston Hughes. Open to upper-level undergraduates and graduate students. Same as English 11:6.

4611 Afro-American Literature II 3 s.h.
A study of literary developments among Afro-Americans from 1925 to the present. The works and works will be studied in relation to the cultural, political, social and literary influences upon Afro-Americans during the middle of the 20th centu-ry. Open to upper-level undergraduates and graduate students. Same as English 11:0.

4616 Afro-American Literature 3 s.h.
A study of the portrayal in fiction of contemporary African states to illustrate both the rich body of "African" literature and contemporary Africa. Open to up- per-level undergraduates and graduate students. Same as English 11:0.

4613 Afro-American literature 3 s.h.
A study of the portrayal in fiction of contemporary African states to illustrate both the rich body of "African" literature and contemporary Africa. Open to upper-level undergraduates and graduate students. Same as English 11:0.

4617 Readings in Afro-American Culture 3 s.h.
Selected readings of significant books in Afro-American culture. May be taken as upper-level undergraduate and graduate students who have completed basic studies of Afro-American culture.

4612 19th Century Afro-American Writers 3 s.h.
A general survey of the history of black music in America from the 17th century through the present, with major emphasis placed on significant forms, styles and con-texts and the sociological significance for each. Lectures are supplemented by film, video, demonstrations, live concerts and listening assignments. Open to upper-level undergraduates and graduate students.

4613 The Band of Brothers 3 s.h.
A study of residential segregation of minority groups, spatial structure of "ghettoes," inter-group interaction and behavior, black urbanism, special segrega- tion of economic and social status. Open to upper-level undergraduates and graduate students. Same as Sociology 135:105.

4610 Minority Rights in an Industrial Society 3 s.h.
A study of minority rights in industry, urban centers and politics. Black history and problems will be studied in relation to American industrialization. Open to upper-level undergraduates and graduate students. Same as Business Administration 48:100.

4612 Afro-American Thought 3 s.h.
A study of the problems of economic, political and social liberation in Africa; patterns and processes of economic development and nation-building. Open to up- per-level undergraduates and graduate students. Same as Political Science 50:164, Geography 46:51.

4616 Afro-American History, 1789-1889 3 s.h.
A study of the development of Afro-American traditions in the United States during the 19th century. Emphasis will be placed on bourgeois political ideology, black nationalism and other aspects of cultural and intellectual development. Open to upper-level undergraduates and graduate students. Same as History 16:123.
American Civilization

45:108 Afro-American History, 1889-Present 3 s.h.
A study of migration, urbanization, industrialization and their effects on the quality of life in the Afro-American community. Open to upper-level undergraduates and graduate students. Same as History 16:190.

45:117 Studies in the Fiction of Afro-Americans 3 s.h.
In-depth study of selected Afro-American novels. The reading list for a particular term is determined by the instructor. Prerequisite: at least one semester of a survey of Afro-American Literature or 45:130 or the equivalent. Same as English 8:152.

45:176 Black Action Theater 3 s.h.
A theater-performance course in black theater. In addition to studying theater related to major presentations by black Americans, students grasp individual responsibilities for production by black action theater. Primarily for undergraduates.

45:178 Black Action Theater 3 s.h.
A theater-performance course in black theater. Plays selected are different from those mentioned and graded in 45:175. Primarily for undergraduates.

45:177 Studies in the Poetry of Afro-Americans 3 s.h.
A study of selected poems in poetic devices in Afro-American literature. The reading list for a particular term is determined by the instructor. Prerequisites: an interest in Afro-American literature. Open to upper-level undergraduates and graduate students. Same as English 8:153.

45:180 Afro-American Drama 3 s.h.
A study of 20th-century drama by Afro-American since 1920. America is grown in the historical development of Langston Hughes, Lorraine Hansberry, LeRoi Jones/Nguyen and Eldridge Cleaver. Open to upper-level undergraduates and graduate students. Same as English 8:154 and Drama 207:186.

45:210 Readings in the Culture of Black America 3 s.h.
An overview of the social, economic, political and religious experiences which have influenced the Negro American. Primarily for graduate students.

45:211 Introduction to Research in Afro-American Culture 3 s.h.
An introduction to research methods and disciplines significant to the study of Afro-American culture. Required of graduate students concentrating in Afro-American Studies. Primarily for graduate students.

45:219 Politics and the Black Writer 3 s.h.
An attempt to explore the role values play in the formulation of political ideology among selected black writers. The list of writers is determined by the instructor for a particular term. Primarily for graduate students.

45:220 Seminar: Afro-American History 3 s.h.
Advanced study in Afro-American History with emphasis on selected topics. Primarily for graduate students. Same as History 16:205.

45:226 Readings in Afro-American History 3 s.h.

45:219 Seminar: Work of Study in Afro-American Literature 3 s.h.
Attention given to select, folk traditions, folklore, cinema, myths, legends and individual biographies in the understanding of African-American literature. Primarily for graduate students.

45:219 Seminar: Advanced Research in Afro-American Literature 3 s.h.
An advanced course in Afro-American literature for graduate students concentrating in Afro-American Studies. Open to upper-level undergraduates and graduate students. Same as English 8:151.

45:219 Seminar: Advanced Studies in Afro-American Drama 3 s.h.
In-depth study of selected Afro-American playwrights or performers. Prerequisite: 45:180 or permission. Primarily for graduate students.

45:281 Human Rights and World Community 3 s.h.

45:403 Seminar in Afro-American Literature 3 s.h.
A seminar on individual and collective problems in Afro-American culture and experience. Primarily for graduate students concentrating in Afro-American Studies.

Significant Courses Related to Afro-American Studies

For course descriptions, see appropriate sections of this catalog.

Anthropology

112:118 Social Anthropology of the Caribbean 3 s.h.
112:120 Urban Anthropology 3 s.h.
112:120 Peoples of West Africa 3 s.h.

Art

11E:02 Primitive Art: African 3 s.h.

Business Administration

18B:205 Business and Society 3 s.h.
6b:253 Employment Relations and Public Policy 3 s.h.

Economics

65:137 Problems in Urban Economics 3 s.h.

Education

7F:104 Education in Newly-Developing Countries 3-3 s.h.
7F:130 Educational Sociology 3-3 s.h.
7F:380 Seminar: Value Problems in the Administration of American Education 3-3 s.h.
7P:109 Social Development of the School-Age Child 3-3 s.h.
7U:133 Teaching the Educationally Different 3-3 s.h.

History

16:61 Survey of American History 1492-1877 3 s.h.
16:62 Survey of American History 1877-1957 3 s.h.

Sociology

34:178 African Social Structure and Social Change 3 s.h.

Urban and Regional Planning

102:102 Urban Politics 3 s.h.

American Civilization

At both the undergraduate and graduate levels, the program in American Civilization provides a broad multidisciplinary knowledge of American culture which permits the student to make an informed choice of a field of special concentration. Courses offer information on the social and governmental organization of America, distinctive features of American culture, literary and artistic developments of the United States, contributions of minority groups to American civilization, and the manifestations of mass and popular culture.

While the undergraduate program offers a useful general education, in addition it enables the student to identify problems in U.S. culture and to define them in specific enough ways to make solutions possible. The major can also serve as partial preparation for secondary teaching in American literature, American history and the social studies; it can serve as well as a solid basis for graduate study in American law, history, social science, literature or American civilization.

Undergraduate Study

The student has the opportunity to develop a highly individualized program within the framework of the four general subject
areas in which coursework is required for an undergraduate major in American Civilization. Those subject area requirements are:

- Four semesters of coursework in American history;
- Two semesters of coursework in each of two subject areas including economics, education, geography, political science, psychology, sociology, anthropology and religion;
- Four semesters of coursework in American literature; and
- 45:2 American Civilization survey II, American Civilization (45:90) senior colloquium and at least two additional semesters of coursework in American Civilization.

List of courses that fulfill the requirements are available at the American Civilization office. A considerable variety of undergraduate programs can be formulated within the required groups. For instance, students have concentrated on areas as different as problems of poverty today, the impact of modern art on America in 1913, and the significance of contemporary sports heroes.

The Master of Arts Program

On the master's level, one program requires the study of the varied materials, methods and bibliography of American Civilization (45:91) [introduction to courses and 45:197 Interpretations of American Civilization]. Students concentrate in two major fields, such as American history, American literature, anthropology or sociology, and may also work in a third.

Requirements for the degree:

- Thirty-eight semester hours of graduate work beyond the B.A., distributed equally among American literature and history, and methods of studying American civilization;
- Study of selected works important for an understanding of American civilization;
- An examination over coursework; and
- Completion of two major papers demonstrating command of methods and materials.

The Doctoral Program

In consultation with an advisor and the comprehensive committee selected by the student, the doctoral candidate progresses through a balanced and integrated program of courses and readings to an in-depth knowledge of significant portions of American civilization. The student will also be responsible for knowledge of any subject his thesis committee deems valuable for the completion of his dissertation.

Qualification

At the end of his or her first year of graduate work at Iowa, the student requests qualification for admission to the Ph.D. program. The executive committee of the program, on examining the student's performance and recommendations by his professors, determines whether he is qualified to proceed.

Comprehensive Examinations

The written portion of the comprehensive examination covers materials and methods for the study of American Civilization and three other fields as developed in conjunction with the student's comprehensive committee. Suitable fields can include American history, American literature, a social science, fine art in America, Afro-American culture, women's studies or popular culture. The student may develop a special "wild card" examination field such as film, 19th century German culture, or philosophy of the social sciences. In the oral portion of the examination, the student must also demonstrate a sound knowledge of the total culture of one chronological period of American civilization.

Thesis

The student must present a satisfactory thesis on a topic which concerns more than one of the above fields.

Final Oral Examination

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

Languages

Language tool requirements are developed by the doctoral candidate in conjunction with his advisor and his comprehensive committee.

Ordinarily, the student offers one language and one other tool. This matter should be attended to as early as possible and certainly before the student takes the comprehensive examination.

Special Facilities

The University is known for creative work in the arts; the faculty is thus exceptionally well equipped to offer cultural studies of such areas as American art and architecture, literature, film and music. Cooperation of the history and social science areas has been equally valuable. A Boettcher grant for work in American civilization/Arts cinema offers fellowships for graduate students who create documentary films useful for disseminating information about American civilization to both students and the general public, and for studying the ways in which American culture influences the making and reception of American films.

Faculty Hostet

Bass, Franklin; Gerber, Kern; Miller, Merrill, Oster, Poul, Seye, Turner, Whitaker (English); Kovacs (Business Administration); Helm, McIntyre, Middles (Anthropology); Alexander, Sabolitch (Art); Duffy (Education); Dykstra, Hawley, J. James, S. James, Kerber, Moses, Persons, Rohrbough (History); Ver- ten (Law); Addis (Philosophy); Davis, Van Dyke (Political Sci- ence); Fox, Douglas, Kohout, Kratz, Lawler, Pope, Weinsteine, Whitworth, Wiesting, Wilmeth (Sociology); Becker, MacCann (Spect and Dramatic Art).

Courses

Primary for Undergraduates

45:1 American Civilization 3 sh.
45:2 American Civilization II 3 sh.
45:6 Liberalism of the African Peoples Same as Core 11:4. 4 sh.
American Civilization

48/18 Black Poetry Workshop
Survey of black American poetry, beginning with its roots in folk music and spirituals, continuing through several periods, such as the Harlem Renaissance and Post-Renaissance, and coming finally to the 1960s and the Black Art Movement. Focus on composition and criticism of poems submitted by students in the class. Open to undergraduates only.

48/19 Contemporary Black Experience
Review and discussion of several versions or images of the contemporary black experience; framework will be essays and discussion, with bibliographic materials provided as per request. Open to undergraduates only.

48/20 Introduction to Afro-American Culture: A Historical Approach
Survey of black history, culture, and society in the United States, from earliest times to the present; history of black culture in the United States history. Open to undergraduates only. Same as History 166.

48/21 Introduction to Afro-American Culture: An Aesthetic Approach
Introduces to the culture of blacks in the United States, with emphasis on significant characteristics of their music, art, literature and philosophy. Open to undergraduates only.

48/22 Introduction to American Art
Same as Art History 106.

48/23 Senior Colloquium
Open only to seniors.

48/24 Honors Colloquium
Open only to honors students.

48/25 Special Project for Undergraduates
Open to undergraduates only.

48/26 Readings in American Civilization
Open only to seniors.

For Undergraduates and Graduates

48/28 African Drama
Drama by contemporary African authors; the reading list includes plays for singing, recit- ates, radio plays, and other works which illustrate the cultures of Africa to- day. Open to advanced undergraduates and graduate students.

48/29 African Poetry
Same as English 8124.

48/30 African Literature
Historical and cultural development of the African continent; major themes in African literature as an expression of the history and art of Africa. Open to seniors and graduate students.

48/31 African Poetry
Same as English 8124.

48/32 African Literature
Historical and cultural development of the African continent; major themes in African literature as an expression of the history and art of Africa. Open to seniors and graduate students.

48/33 African Poetry
Same as English 8124.

48/34 African Literature
Historical and cultural development of the African continent; major themes in African literature as an expression of the history and art of Africa. Open to seniors and graduate students.

48/35 African Poetry
Same as English 8124.

48/36 African Literature
Historical and cultural development of the African continent; major themes in African literature as an expression of the history and art of Africa. Open to seniors and graduate students.

48/37 African Poetry
Same as English 8124.

48/38 African Literature
Historical and cultural development of the African continent; major themes in African literature as an expression of the history and art of Africa. Open to seniors and graduate students.

48/39 African Poetry
Same as English 8124.

48/40 African Literature
Historical and cultural development of the African continent; major themes in African literature as an expression of the history and art of Africa. Open to seniors and graduate students.

48/41 African Poetry
Same as English 8124.

48/42 African Literature
Historical and cultural development of the African continent; major themes in African literature as an expression of the history and art of Africa. Open to seniors and graduate students.

48/43 African Poetry
Same as English 8124.

48/44 African Literature
Historical and cultural development of the African continent; major themes in African literature as an expression of the history and art of Africa. Open to seniors and graduate students.

48/45 African Poetry
Same as English 8124.

48/46 African Literature
Historical and cultural development of the African continent; major themes in African literature as an expression of the history and art of Africa. Open to seniors and graduate students.

48/47 African Poetry
Same as English 8124.

48/48 African Literature
Historical and cultural development of the African continent; major themes in African literature as an expression of the history and art of Africa. Open to seniors and graduate students.

48/49 African Poetry
Same as English 8124.

48/50 African Literature
Historical and cultural development of the African continent; major themes in African literature as an expression of the history and art of Africa. Open to seniors and graduate students.

48/51 African Poetry
Same as English 8124.

48/52 African Literature
Historical and cultural development of the African continent; major themes in African literature as an expression of the history and art of Africa. Open to seniors and graduate students.

48/53 African Poetry
Same as English 8124.

48/54 African Literature
Historical and cultural development of the African continent; major themes in African literature as an expression of the history and art of Africa. Open to seniors and graduate students.

48/55 African Poetry
Same as English 8124.

48/56 African Literature
Historical and cultural development of the African continent; major themes in African literature as an expression of the history and art of Africa. Open to seniors and graduate students.

48/57 African Poetry
Same as English 8124.

48/58 African Literature
Historical and cultural development of the African continent; major themes in African literature as an expression of the history and art of Africa. Open to seniors and graduate students.

48/59 African Poetry
Same as English 8124.

48/60 African Literature
Historical and cultural development of the African continent; major themes in African literature as an expression of the history and art of Africa. Open to seniors and graduate students.

48/61 African Poetry
Same as English 8124.

48/62 African Literature
Historical and cultural development of the African continent; major themes in African literature as an expression of the history and art of Africa. Open to seniors and graduate students.

48/63 African Poetry
Same as English 8124.

48/64 African Literature
Historical and cultural development of the African continent; major themes in African literature as an expression of the history and art of Africa. Open to seniors and graduate students.

48/65 African Poetry
Same as English 8124.

48/66 African Literature
Historical and cultural development of the African continent; major themes in African literature as an expression of the history and art of Africa. Open to seniors and graduate students.

48/67 African Poetry
Same as English 8124.

48/68 African Literature
Historical and cultural development of the African continent; major themes in African literature as an expression of the history and art of Africa. Open to seniors and graduate students.

48/69 African Poetry
Same as English 8124.

48/70 African Literature
Historical and cultural development of the African continent; major themes in African literature as an expression of the history and art of Africa. Open to seniors and graduate students.

48/71 African Poetry
Same as English 8124.

48/72 African Literature
Historical and cultural development of the African continent; major themes in African literature as an expression of the history and art of Africa. Open to seniors and graduate students.

48/73 African Poetry
Same as English 8124.
Anthropology

Department Chairman: Richard Shiffer, Jr.

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

All human cultures, whether historical or contemporary, simple or complex, are part of anthropology's purview.

Anthropology provides a framework for understanding the place of humans in the natural world, their evolutionary background and development, the organization of social life, cultural and symbolic systems, the evolution of cultures and societies and the interactions among society, personality and shared causes of thought and feeling.

Undergraduate Program

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—anyone whose work will involve cultures and subcultures other than his own.

Majors must take at least 30 semester hours of coursework in anthropology, including 113:5 Introduction to the Study of Culture and Society, 113:10 The World's Peoples and 113:11 Introduction to Archaeology and Physical Anthropology. In addition each student must take one course in archaeology, one course in ethnology and one course in social anthropology. The remaining hours are to be selected in consultation with the advisor.

Anthropology electives offer a wide range of choices, including courses dealing with language and culture, social problems of underdeveloped areas, religious activity in folk and tribal settings, primitive art, biological anthropology and urban anthropology. Specialization is encouraged in the undergraduate program, which is designed to give the student the most possible cross-cultural background. Coursework also is encouraged in such related areas as sociology, linguistics, geography, psychology, sociology and statistics.

Special Programs

Honors

Designed for maximum development of superior abilities and interests, the Honors Program in anthropology is open to students with a minimum cumulative grade-point average of 3.5 overall and 3.2 in anthropology. In addition to the regular requirements for a major in anthropology, honors students must complete the Department's Honors Seminar and Honors Research courses.

Field Research

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

Graduate Programs

Although dedicated to the holistic view of anthropology, the Department's emphasis lies in archeology, social-cultural anthropology and anthropological linguistics. The Department offers work leading to the degrees Master of Arts and Doctor of Philosophy in anthropology. It is, in conjunction with the Department of Linguistics, to the Doctor of Philosophy in cultural
anthropology and linguistics, with a concentration in either field.

M.A. Program
The M.A. program is general in nature, designed to prepare the student to deals with any aspect of anthropology as an introductory level.

The Department offers the M.A. degree with or without thesis. The latter program is considered terminal, and ordinarily precludes consideration for admission to the Ph.D. program.

The number of semester hours of credit required for the M.A. with thesis may vary from 30 to 38, depending upon the student's previous anthropological training. The non-thesis program requires at least 38 semester hours of graduate work.

The first-year graduate student entering the program with a B.A. degree in any discipline, or with a master's degree in a discipline other than anthropology, must satisfactorily complete the core course sequence, which includes 113:140 Social Anthropology, 113:168 Archeological Theory and Method, 113:171 Anthropological Linguistics and 113:185 Biological Anthropology and related graduate seminars, and must complete one additional course in social anthropology, archeology, linguistics, research methods or statistics, and two ethnographic area courses.

Students with previous training in anthropology may petition for permission to waive parts of this distribution requirement.

Ph.D. in Anthropology
The Ph.D. degree represents a balance between general competence in all the sub-fields of anthropology covered at the M.A. level, and a professional level of specialization in one.

These are the requirements for the Ph.D. degree in anthropology:
- At least 72 semester hours of graduate coursework;
- Demonstration of a reading knowledge of one foreign language;
- Mastery of a relevant research skill (e.g., fluency in a foreign language or proficiency in a branch of mathematics, logic, computer programming, geology or paleontology);
- Ethnographic or archeological specialization in a major geographic area approved by the student's Ph.D. advisory committee, e.g., North America, Mesoamerica, Oceania, Southeast Asia or the circumpolar region;
- Specialization in a major and minor topical area (e.g., kinship or social organization, ethnography, settlement pattern anthropology, language and culture, religion, cultural ecology, urban anthropology);
- A written comprehensive examination in the student's area of specialization; and
- Preparation and oral defense of a dissertation.

The comprehensive examination ordinarily will be taken when the student's coursework is completed or nearly completed, after the research skills requirements have been satisfied, and before he or she begins field work.

All doctoral candidates are required to carry out original anthropological research. Ordinarily, students conduct field work as the basis for their dissertations; however, occasionally a research proposal may be carried out using only documents, collections or other source materials.

Ph.D. in Cultural Anthropology and Linguistics
The Ph.D. program in cultural anthropology and linguistics prepares the student for professional teaching and research in the linguistic and nonlinguistic 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 entering student must demonstrate reasonable proficiency in a language other than his native tongue. In the course of the program, he or she must:
- Demonstrate competence in at least one research tool (another language, statistics, symbolic logic, etc.);
- Pass a qualifying examination in cultural anthropology no later than his or her third semester of residence;
- Pass a comprehensive examination in cultural anthropology and linguistic and ethnological theory and methodology;
- Complete a dissertation.

A student entering the program after the B.A. degree need not have taken an undergraduate major in either anthropology or linguistics. A student who has not taken the undergraduate equivalent must also take 113:01 General Anthropology. A student is in the program may first take the M.A. degree in either anthropology or linguistics before proceeding to the joint Ph.D. program. Previous coursework of one of the two departments at the M.A. level may be applied toward the requirements in that division of the joint Ph.D. program.

These courses are required during the first three semesters of residence: 113:200 Prehistory in Linguistics; 113:100 Antiquity and Acoustic Phonetics; 110:111 Introduction to Synaesthetic Analysis and 103:112 Seminar: Introduction to Phonological Analysis; 113:140 Social Anthropology; 113:200 Ethnological Theory or 113:116 Native Peoples of Middle America; 113:120 Peoples of West Africa. Also required are one comparative or historical linguistic course and an additional cultural anthropology course dealing with social institutions. These may be taken at any time.


Graduate Admission
Applicants for admission to the graduate program in anthropology will be considered regardless of the field of their previous training. An applicant with an M.A. degree in another discipline must seek admission as a first-year graduate student. Admission to the Department's graduate program may be at either the M.A. or Ph.D. level; however, full admission to the Ph.D. program depends on successful completion of departmental requirements.

Applicants must meet the general admission requirements of the Graduate College (see "Graduate College"). In addition, all applicants are required to submit at least one type example of their previous work (e.g., a term paper or an original ex-
perimt). Applicants with an M.A. degree from another university are required to submit a copy of their master's thesis; in cases where the M.A. has been granted without thesis, the master's thesis is not yet complete, typewritten copies of three papers completed in graduate school should be submitted.

It is desirable that the applicant has a 3.0 grade-point average or better. However, applicants with lower grade-point average may be admitted with conditional status if other criteria indicate potential for graduate work.

Minor in Anthropology

A graduate student from another department of the University may obtain a minor in anthropology. The number of credit hours and the selection of courses which constitute the minor should be determined in consultation with members of the faculty of the Department of Anthropology, and with appropriate members of the student's major department.

Special Facilities

The Department of Anthropology houses the state of Iowa's Archeological Collection and the University is a participant in the Human Relations Area Files, an extensively annotated bibliography of source materials on the peoples of the world—their environment, behavioral patterns, social lines and cultures. The HRA Files and other Main Library resources give anthropology students ready access to source materials on more than 400 cultures.

Faculty Strengths

Members of the anthropology faculty have studied and lived in Oceania, the Orient, the Near East, Africa, Thailand, India, the Caribbean, Mexico, and the Canadian subarctic. Ongoing research centers on problems of subsistence and precontact trade routes in the Pacific, prehistoric trade routes in the Upper Texas Valley of Mexico, patterns of political development in emerging countries, comparative ethnographic studies of totemic gathering groups, archeological investigation of pre-Aztec sites in Mexico, relation of alcohol and culture in Central America, and folk curing practices and beliefs among the Lahu of northern Thailand. During the past two years, faculty members have continued their research in Mexico, Liberia, the Canadian subarctic, the Caribbean, Hawaii and Arizona.

Faculty Roster

Professor Ales H. Shostak; associate professor Charlotte McElroy; assistant professors Carter, Davis, Dusenberg, Kowalski, Marshall, Mager.

Courses

For Undergraduates Only

110:2 Introduction to the Study of Culture and Society 3 a.h.
Compressive study of culture and social organization; may be taken in partial fulfillment of major in anthropology.

112:22 The World and People 2-3 a.h.
Anthropological study of the world, systems of belief and action by which different peoples live; anthropological literature and ethnographic films on Americas, Africa, Europe, Asia, and Australia, may be taken in partial fulfillment of social science airm requirement.

111:1 Introduction to Anthropology and Physical 3-4 a.h.

111:25 Development of man and society from the viewpoint of anthropology; an introduction to man's physical anthropology and culture history. Same as 111:25.

111:27 Individual Study 1-3 a.h.


135:25 Undergraduate majors with superior academic merit; selected theoretical and methodological issues; participation in senior seminar and research paper.

137:2 Honors Seminar: An advanced special research project, under Honors Chairman, chosen after consultation with the Honors advisor; may be repeated.

Advanced Courses

General Anthropology

119:11 General Anthropology 3 a.h.

119:12 Prehistoric cultures; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relation to the development of modern man; prehistoric and modern man's relati

119:13 History of Anthropology 3 a.h.

119:12 Development of anthropology as a discipline; its relationship to other social sciences; the development of anthropology in the United States; the influence of intellectuals and cultural anthropologists. Prerequisites: 119:11, 119:25 or consent of instructor.

112:14, 114:14 Cultural Anthropology 2-3 a.h.

119:12 Theoretical and practical orientation in comparing and contrasting behavior and ideas of different cultures; for advanced students; centers on the study of a single problem in an advanced cultural pattern; may be taken in a senior seminar in anthropology; may be repeated.

119:12 Cultural Personality 2 a.h.

119:12 Relationship of cultural and psychological variables in understanding behavior; cross-cultural and intercultural behavior and organization in personality and sociocultural behavior; same as Sociology 119:12. Prerequisites: 119:11, 119:25 or 216:1.

119:11 Political Activity 2 a.h.

119:12 Theories and interpretations of norms are connected to the social norms of the family in the context of individualism in anthropology.

119:11 Ethnology 2 a.h.


119:11 Economic Anthropology 2 a.h.


119:12 Women's Problems 2 a.h.


119:12 History of Anthropology 2 a.h.

119:12 Development of anthropology as a discipline; its relationship to other social sciences; the development of anthropology in the United States; the influence of intellectuals and cultural anthropologists. Prerequisites: 119:11, 119:25 or consent of instructor.
Anthropology

112/113 African Arts in the New World 6 a.h.
Social and cultural history of Black populations in the New World; ritual and social
practices will be explored in the program; see in Anthropology 45/113.

112/113 Native Peoples of South America 6 a.h.
Indigenous peoples of South America and the Caribbean; major social, politi-
cal, and historical events; we will explore how the lifestyles and cultures of
these people have developed over time; see in Anthropology 45/113.

112/113 Native Peoples of the Middle East 6 a.h.
An introduction to the lives and cultures of permanently settled peoples of the
Middle East; this course will focus on the development of societies in the
region; see in Anthropology 45/113.

112/113 Peoples of Western Africa 6 a.h.
Analysis and comparison of traditional African cultures and societies; their de-
velopment and influence on the modern world; see in Anthropology 45/113.

112/113 People of East Asia 6 a.h.
Analysis and comparison of traditional African cultures and societies; their de-
velopment and influence on the modern world; see in Anthropology 45/113.

113/113 Ethnology of Japan 3 a.h.
Human behavior in the social and cultural setting of Japan; focus on social and
cultural institutions; see in Anthropology 45/113.

113/113 Ethnology of China 3 a.h.
Human behavior in the social and cultural setting of China; contrast these
cultures with those of Japan, and compare them with other cultures; see in
Anthropology 45/113.

113/113 Ethnology of Oceania 3 a.h.
Emphasis on comparative ethnography of island Oceania (New Guinea, Micronesia,
Melanesia) to acquaint student with past and current history of the Pacific
area; special problems of living in island habitats; see in Anthropology 45/113.

113/113 Ethnology of Southeast Asia 3 a.h.
Human behavior in the social and cultural setting of Southeast Asia; focus on the
ideas and practices of anthropological science; see in Anthropology 45/113.

113/113 Ethnology of Africa 3 a.h.
Emphasis on comparative ethnography of Black peoples; the themes include
ethnic identity, social, economic, political organization, and the relations of
these to other social forms; see in Anthropology 45/113.

113/113 Urban Anthropology 3 a.h.
Focus on the impact of modern and industrialized societies on urban environments;
see in Anthropology 45/113.

113/113 Social Structure and Social Change 3 a.h.
Examination of social organization, including kinship, social stratification,
and social networks; see in Anthropology 45/113.

113/113 Social Anthropology 3 a.h.
The study of social structure and social change; see in Anthropology 45/113.

113/113 Cultural Anthropology 3 a.h.
Cultural diversity and cultural change; see in Anthropology 45/113.

113/113 Economic Anthropology 3 a.h.
Economic theory and the ways in which people react to economic change;
see in Anthropology 45/113.

113/113 Prehistory and Prehistoric Socio-Economic Organization 3 a.h.
Prehistory and the socio-economic organization of human populations; see in
Anthropology 45/113.

113/113 Historical Archaeology 3 a.h.
Archaeological methods and technologies used in the study of the past; see in
Anthropology 45/113.

113/113 Materials Methods in Archaeology 3 a.h.
Study of archaeological materials recovered by excavation and survey training in all
areas of laboratory science; see in Anthropology 45/113.
12.1/123 High Civilization of Mesoamerica and the Central

Archaeology 3 s.h.
Archaeological data relating to the development of civilization in the New World, with emphasis on Mesoamerican civilizations; archaic materials incorporated where

Appropriate. Prerequisite: 1153, 1153/61 or 1153/6.

1132 Comparative Civilizations 3 s.h.

World Civilization: The Early World and the New World; emphasis on develop-

ment of major civilizations and their interaction with each other; students will learn the appearance of other civilizations; both ancient areas of primary concern are Mesopotamia, the Central Andes, the Near East, Egypt, the Indian Valley and China. Prerequisite: 1153, 1153/61 or 1153/6.

11336 Prehistory of Mesoamerica 3 s.h.
Survey of prehistoric development and cultural origins of Australia and the Pacific

Islands.

11336 Archaeology Theory and Method 2-3 s.h.

Techniques for the recording of archaeological data and their interpreta-

tion. Prerequisite: 1151/61; consent of instructor or graduate standing.

11336 Prehistory of South and East Asia 3 s.h.

Prehistoric developments and cultures in China, Japan, mainland and island Southeast Asia and India.

11336 Field Research in Archaeology

2 s.h.

Linguistics

11512 General Linguistics 3 s.h.

Development, structure and functions of language; non-human and non-verbal communication; language classification and distribution; relations to thought and social systems. Prerequisite: consent of instructor.

11512 Anthropological Linguistics 3 s.h.

Structures of spoken language, emphasizing the techniques for collecting and ana-

lyzing linguistic data; the historical and geographical relationships among speak-

ers, languages, and language families. Same as Linguistics 105/71.

11512 Linguistic Anthropology 3 s.h.

Concentration of selected topics in the anthropological study of lan-

guage: culture, linguistic variation, sociolinguistics, writing systems, distribution of languages; topic content will depend on instructor. Prerequisite: 1151/71; or consent of instructor. Same as Linguistics 1071.

115272 Field Methods in Ethnolinguistics 3-5 s.h.

Research methods in ethnolinguistics: emphasis on techniques of collecting field data, description and analysis of data and research design; same as Linguistics 105, 379. Prerequisite: consent of instructor.

11527 Ethnolinguistics Theory 3-5 s.h.

Same as above.

Applied Anthropology

11512 Social Problems of Underdeveloped Areas 3 s.h.

Societies observed as a sociological problem; social formations and social struc-

tures of underdeveloped areas; social and economic development programs; social change and the contact zones of industrialization and development in underdevel-

oped areas. Same as Sociology 94, 121. Prerequisite: 1153, 1153/61 or 1153/6.

11524 Process and Problems of Development: Africa 3 s.h.

11534 Process and Problems of Development: Latin America 3 s.h.

Same as Urban and Regional Planning 102, 24; same as above.

11524 Process and Problems of Development: Latin America 3 s.h.

11524 Process and Problems of Development: Latin America 3 s.h.

Same as Urban and Regional Planning 102, 24; same as above.

Individual Reading and Research Projects

11336 Independent Study: Anthropology

11344 Research: Anthropology

11386 Thesis

Art and Art History

School Director: Wallace L. Tomselle


The University of Iowa School of Art and Art History is recog-

nized as one of the 10 leading university-based art schools in the

world. It pioneered the writer-teacher concept, ap-

pointing its teachers on the quality of their work rather than the number of their degrees; it was one of the first university-based

art schools to bring established professional artists to its perma-

nent faculty.

The emphasis on the creative production of its faculty reflect-

ed an educational philosophy which made Iowa one of the first

universities in the United States to accept creative work for academic credit.

The School early established a tradition and achieved national

recognition for large exhibitions of contemporary American

painting and sculpture.

Its national image and position are maintained not only through the University of Iowa Art Museum, its program of ex-

hibitions and its growing collection of art works of all periods and

nations, but also through its continuing program of employ-

ing visiting artists and lecturers of both national and international

prominence.

It was among the first schools of art to join studio art with art

history studies, reflecting the concept that the young artist will be

attracted by a formal study of the traditions of art, and a pro-

gressive horizon from personal experience with the creative process.

The vitality of its undergraduate and graduate programs in art

history continues with the support of an excellent art library and a

large collection of visual materials. The employment of visit-

ing lecturers for short-term workshops in addition to the perma-

nent faculty continues to keep students directed with a fresh

and current scholarship.

A number of the School's graduates enjoy success as practicing

professional artists, art historians, art department administra-

tors, museum directors and curators, theatre designers and

teachers. Regardless of employment depressions, Iowa graduates

have traditionally been in demand and have found acceptable positions. This

condition continues, even though the emphasis has always been placed on the fine arts and so "commercial" art is offered in this

program. As far as feasible, the design of academic programs is

arranged to meet the individual student's needs. Intensive as well as

general programs in studio arts and history can be developed.

The major requirements are broad and flexible, discouraging

unilateralism. The art history major requires at least an introduc-

tion to studio work. The studio major requires development in one specialty in art history and in at least three areas of studio

art. The aim of the joint curriculum is to give students a basic

understanding of art and aesthetics; it does not focus on particu-

lar short-term styles.

Bachelor of Arts

For general requirements, see the "College of Liberal Arts" section of the Catalog.

The student must earn a total of at least 74 semester hours of credit in non-art courses. For art history majors only, there must
include two or more semesters of a second foreign language and
at least 16 semester hours in at least three of these related areas:
archaeology, classics, drama, history, language, literature, mu-
sic, philosophy, religion or sociology.

**Studio Emphasis**
The Bachelor of Arts degree with an emphasis in studio requires
the following courses and credits in art:

**History of Art**

*Introductory level*

11:37 History and Appreciation of Art 4 s.h.
11:38 Art in the Western World 4 s.h.
or
11:42 Art in the East and West 4 s.h.
Intermediate-level course 3 s.h.

**Studio**

15:3 Art Forms I 4 s.h.
15:4 Art Forms II 4 s.h.

Additional courses in at least three separate areas, including
both two- and three-dimensional courses

Electives
Courses in history of art, studio or art education combined to
bring the total semester hours of courses listed in the School
of Art and Art History (11:1, 11:2, 11:3) to not less than 38,
but no more than 50 s.h. Credits earned in art beyond 50 s.h.
do not count toward the B.A. degree.

**Art History Emphasis**
The Bachelor of Arts degree with an emphasis in art history re-
quires the following courses and credits in art:

**Studio, as advised** 8 s.h.

**Art History**

*Introductory level*

11:37 History and Appreciation of Art 4 s.h.
11:38 Art in the Western World 4 s.h.
or
11:42 Art in the East and West 4 s.h.
Intermediate and advanced minimum 10 s.h.

**Art Electives**

Must raise the total of art courses to a minimum of 38 s.h.
and may raise the total to a maximum of 50 s.h. Art courses
can be taken beyond this level, but do not count toward the
B.A. degree.

**Art Education**

Art education majors may elect to emphasize either studio or art
history and must also complete 1E:196 Concepts in Art Educa-
tion and 1E:198 Art Education Studio.

The undergraduate degree program in art education is admin-
istered by the School of Art and Art History in cooperation with
the College of Education. Certification requirements for teach-
ing art in the elementary and secondary schools are administered
through the College of Education. Certification requirements
specifically for art education majors are:

- **Methodology:**
  - 7E:145 Methods: Art 3 s.h.
  - 7E:105 Advanced Methods: Art 3 s.h.
  - 7E:197, 7S:197 Aesthetic Education 2 s.h.

For the general certification requirements, see the College of
Education section of the Catalog.

**Bachelor of Fine Arts**

A student seeking the Bachelor of Fine Arts degree must meet
the general education requirements of the College of Liberal
Arts (see "College of Liberal Arts"), earn a total of 62 semes-
ter hours of credit in non-art courses and earn at least 62 semes-
ter hours of credit in art and art history courses, which must
include the following:

**History of Art**

*Introductory level*

11:37 History and Appreciation of Art 4 s.h.
11:38 Art in the Western World 4 s.h.
or
11:42 Art in the East and West 4 s.h.
Intermediate level course 3 s.h.

**Studio**

15:3 Art Forms I 4 s.h.
15:4 Art Forms II 4 s.h.

Major studio subjects 11 s.h.

Three minor studio subjects 3 s.h., each
Total 26 s.h.
or
Major studio subjects 16 s.h.

Two minor studio subjects 3 s.h., each
Total 26 s.h.

**Electives**

Combined courses in history of art, studio or art education to
bring the total semester hours of courses listed in the School
of Art and Art History (11:1, 11:2, 11:3) to 62 semester hours.
The B.F.A. is not offered with a major in the history of art.

Studio majors must apply to enter the B.F.A. program. Ap-
lication is made following completion of the basic Art Forms
courses. Students obtain the review form from an advisor and
make an appointment with the faculty in the proposed major
area of concentration for the day of the B.F.A. review. Admis-
sion to the B.F.A. program is by permission of area faculty.

**Art Education**

Art education majors in the B.F.A. program must include
1E:196 Concepts in Art Education and 1E:198 Art Education
Studio in their 62 semester hours of art. See the Bachelor of
Arts section of the Catalog for general requirements in art edu-
cation.
Graduate Programs

Note: A student who wishes to prepare for undergraduate teach-
ing by combining the art history and studio areas may do so at the Master of Arts level as indicated in the following program descriptions for these two areas. Such a combination generally requires one or two additional semesters.

Master of Arts in Art History

The student is expected to acquire a broad general knowledge of art history as an academic and humanistic discipline, become familiar with major periods and monuments of world art and gain proficiency in techniques or research within selected areas. Specific requirements include the B.A. or B.F.A. degree, with at least 18 semester hours of undergraduate work in art history, and a minimum of 30 semester hours of graduate-level coursework, with a grade-point average of 3.0 or higher, and includ-
ing the following:

- Methodology of Art History and Criticism 3 s.h.
- Two other art history seminars (with different instructors) 4-6 s.h.
- Additional art history courses 14-21 s.h.
- Studio 0-6 s.h.
- Courses outside the school 0-9 s.h.

Students with little or no undergraduate studio training are re-
quired to take two courses in different studio fields. Art history graduate students with substantial undergraduate studio training will be exempted from the graduate studio requirement. Consider-
ation will be given by the studio faculty to the lesser prepara-
tion and/or aptitude of the art history major, who will be per-
nanted to take studio courses under individual instruction and/or on an S/U basis. M.A. degree candidates with under-
graduate majors in art history are encouraged to take courses outside the School.

A student preparing to teach in both the art history and studio areas will take 12 to 18 semester hours of studio coursework, with a minimum of 9 semester hours in one subject, in addition to the University's undergraduate requirement for a studio ma-
jor, and will also satisfy the drawing requirement.

Foreign Language

Within the first 20 hours of graduate work, the M.A. candidate will be expected to demonstrate the ability to read and understand historical writings in an appropriate foreign language, normally German or French, but other languages, including oriental languages, may be acceptable. This requirement may be satisfied by the Graduate School Foreign Language Test (GSFLT), the examina-
tion of an appropriate University of Iowa language department, satisfactory completion of the final semester of a Ph.D. lan-
guage reading course or satisfactory completion (at least a B grade) of the fourth semester of a college or university language course.

Comprehensive Examination

Qualification for the M.A. degree requires a comprehensive written and oral examination, approximately six hours in length, broadly covering the entire field of art history. The examination normally is given at the beginning of the fall semester and summer session. The student must take this examination within the two regularly-scheduled examination dates following the semester in which he or she completes 30 s.h. of graduate work.

Thesis

The student must also prepare either a written thesis, for which three semester hours of credit may be allowed, or a written research paper (approximately 20-40 pages in length), which will be filed in the Art Library. The research paper may emerge from either seminar or regular coursework. It must be accept-
able to the instructor of the course in which it is submitted. A full draft of the thesis must be submitted by the end of the se-
semester preceding the semester in which the degree is to be tak-
en. The research paper must be submitted no later than the mid-point of the semester in which the degree is to be taken.

Area Requirements

To be awarded the M.A. degree, the student must have done at least 9 hours in courses in those five areas of art his-
tory:

- Ancient (up to Early Christians, ca. 300 A.D.);
- Medieval (ca. 300-1300 A.D.);
- Renaissance (ca. 1375);
- Modern (from ca. 1750);
- Oriental (India, China, Japan, Islamic).

The student may have taken these courses as an undergradu-
ate or a graduate student, but the courses should be equivalent to one-semester 100-level courses at The University of Iowa—
that is, above the intermediate survey level covering the entire
area. Examples from each area would be Roman Art; Early Christian Art; Italian Renaissance Art; 19th-Century Art; Art of China.

Deficiencies

At the time of admission to the M.A. program, the transcript of 
each entering student will be examined to ascertain if in which course distribution deficiencies exist. To remedy the defi-
ciencies, the student will normally register in 100-level courses in the appropriate areas, either for credit or audit.

Master of Arts in Studio Art

The M.A. in studio may be taken with a major in painting, drawing, sculpture, print, design, photography, ceramics, me-
alnishing or multimedia. The degree requires:

- The B.A. or B.F.A. in art equivalent to that offered at The University of Iowa (undergraduate deficiencies, if any, may be made up concurrently with, but are in addition to, gradu-
ate requirements); and
- A minimum of 38 semester hours of graduate work, including at least 12 semester hours in a major subject studio, a total of from 31 to 29 semester hours in studio courses, nine semester hours in the history and theory of art and up to eight semester hours of courses outside art and art history; and
- Studio and written theses.

Graduate students who have not had drawing at The Univer-
sity of Iowa are required to take at least one drawing course dur-
ing the first year.

A student preparing to teach in both the studio and art history areas may offer as an art history major of 15 semester hours, in-
cluding 114:254 Methodology of Art History and Criticism and one other seminar. These hours are in addition to the universi-
ty's undergraduate requirement for an art history major, and in
combination with the undergraduate hours, must satisfy the dis-
tribution requirement for art history.

The Thesis
Major in studio must submit a thesis of selected studio work. An
additional written thesis is required, and may be a brief
statement by the student of his technical, aesthetic and/or psy-
chological approach; unless he is assigned an art history or tech-
nical subject by his adviser. If technical, content will be super-
vised by the studio adviser; if historical, it will be super-
vised by an art historian.

Studio majors may take 18:199 Individual Instruction and
18:392 M.A. Writer's Thesis in the amount of one semester hour
each for their studio and written theses. Such credits are
applicable to the total number required for graduation but are in
addition to other requirements for the M.A. or M.F.A. degree.

All studio and written theses become the property of the Uni-
versity. On registering, students automatically accept this con-
tdition.

Students should obtain regulations concerning the form of
written theses, deadlines for submission, etc., from the Gradu-
ate College Office.

Clearance for Degree Candidacy
A student is only a provisional candidate for the M.A. degree
until cleared for candidacy by a faculty review. The student
must be cleared for M.A. degree candidacy at least two full se-
mesters, or one semester and a summer session, before applying
for the degree.

Master of Arts in Art Education
Requirements for the M.A. in art education are:
The B.A. or B.F.A. is an art equivalent to that offered at The
University of Iowa;
Courses leading to teacher certification with a major in art;
Completion of 38 semester hours of graduate credit, including
18 semester hours of studio and art history in a ratio of two
to one, eight semester hours in art education and 12 semester
hours to be specified after the student commences his pro-
gress;
An oral and/or written examination in art education and a re-
lated field;
A written thesis based on research in art education or art his-
tory or a studio thesis (a studio thesis must be accompanied
by a brief statement of the student's technical, aesthetic
and/or psychological approach) and, as for the M.A. degree
in studio, clearance for M.A. candidacy by faculty review.

Master of Fine Arts (studio only)
The M.F.A. may be taken with a studio major in painting, draw-
ing, sculpture, prints, design, photography, ceramics, met-
alumining or multimedia. The degree requires:
The M.A. degree in art equivalent to that offered at The Uni-
versity of Iowa;
A minimum of 60 semester hours of graduate work, including
12 to 24 semester hours in a major studio subject, at least six
semester hours in a minor studio field at least 43 semester
hours of studio courses, nine semester hours in art history and
theory of art, and a maximum of eight semester hours in
courses outside the school.

Acceptance of studio thesis supervision and advisory respon-
sibility by a member of the staff qualified in the student's chosen field of specialization;
Acceptance of responsibility for supervising the written the-
sis, where such is assigned, by a member of the art history staff;
Formation of a faculty committee for review of the candidate's progress and final review and acceptance of the thesis.

All hours accumulated toward an M.A. degree earned at Iowa
are applicable to the M.F.A. degree, with the exception of the
six credits. Approved M.A. credits from another accredited col-
lege or university are applicable within the limits of the 24-s.h.
residence requirement.

Clearance for Degree Candidacy
Students entering the graduate program with an M.A. are only
provisional candidates for the higher degree until cleared for
M.F.A. candidacy by a faculty review. A student may be invit-
ed by his adviser to apply for clearance for the M.F.A. degree
following acceptance of the M.A. thesis. As in the case of the
M.A. degree, two full semesters, or a semester and a summer
session, must elapse between the clearance and the awarding of
the M.F.A.

Doctor of Philosophy (art history only)
In the Ph.D. program, the student is expected to have a broad
general knowledge of art history and to acquire detailed knowl-
edge of monuments, an understanding of artistic development
and a knowledge of methods of research within certain special-
ized areas of world art to be selected by him in conjunction
with appropriate faculty members.

The degree requires a minimum of 72 semester hours of grad-
uate level coursework, including a maximum of 38 semester
hours of work taken for the M.A. degree, and these minimum
course requirements beyond the M.A. program:
Two art history seminars (with two different instructors),
4-6 s.h.
Additional art history courses
18-28 s.h.
Courses outside the school
0-12 s.h.

Students holding the M.A. from another institution are re-
quired to take the School's M.A. comprehensive examination
within the first two regularly scheduled examination dates fol-
dowing admission.

Foreign Languages
Within the first 15 semester hours of graduate work beyond the
M.A., the doctoral student must demonstrate ability to read art
historical writings in two appropriate foreign languages. For ma-
jors in European art, a language normally studied for majors in
oriental art, Sanskrit, Chinese or Japanese may be acceptable. The language examination procedure is explained in the
M.A. program description.
Comprehensive Examination

The student must take a comprehensive examination in one major field. A minimum of five members of the graduate faculty, including those who prepared written examinations in the major and minor fields. Full details of the Ph.D. committee requirements are presented in the University Manual of the Graduate College.

Dissertation

The student must prepare a written dissertation constituting an original scholarly contribution to the field. Up to six semester hours of credit toward the art history course requirements may be allowed for dissertation preparation. The dissertation topic must be formally presented for faculty approval.

Final Examination

The student is given a final oral examination on the dissertation, by a committee of the graduate faculty, one of whom must be from outside the School. For full details, consult the Manual of the Graduate College.

Assistantships and Scholarships

Assistantships paying approximately $3,200 per academic year for 20 hours of departmental duties weekly are awarded to graduate students in competitive basis. Half-time assistantships are also available. The award of an assistantship entitles the recipient to the in-state tuition rate. Scholarships paying partial or full tuition and entailing no departmental duties require at least a 3.0 cumulative grade-point average.

These financial aids are generally awarded to students who have been in residence for at least one semester, so that faculty members have had an opportunity to observe their performance and potential.

General Information

Inquiries about programs, requirements or financial aid should be addressed to the director of the School. Application forms for Graduate College admission and for financial aid are available from the School's admissions committee or the University Office of Admissions.

Facilities

The building housing the School of Art and Art History is located in the Iowa Center for the 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 Academic Building. A recently-constructed wing of the School of Art and Art History building provides a large undergraduate painting studio, one of the world's most complete intaglio print shops and an art history lecture hall, as well as School offices.

Other School facilities include furnaces and equipment for large scale iron and bronze casting processes as well as facilities for welding and fabrication of metal sculpture, a well-equipped darkroom, kilns sufficiently large to fire life-size ceramic sculpture and a large shop for woodworking, metalworking and industrial design. There are also glass melting furnaces, electroforming equipment, 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 40,000 volumes. Visual materials resources include more than 155,000 slides used in art history classes, and students have access to an additional 80,000 photographs and study cards.

While not a School of Art and Art History 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 consists of active scholars and artists. The publications of faculty members in art history result from wide-ranging research projects, including on-site research in the Far East, North Africa and Europe, as well as the Americas. Members of the studio faculty participate in national and international exhibitions. The art education faculty is involved both in studio work and in scholarly evaluation of educational programs.

Faculty Roster


Courses

Art History

Primary for Undergraduates

1101: Introduction to Islamic Art 2 s.h.
Art and architecture in Islamic world. Prerequisites: 11:37, 11:20 or 11:42, or equivalent.

1102: Introduction to Oriental Art 2 s.h.
Art and archaeology in India, Southeast Asia, China and Japan. Prerequisites: 11:37, 11:20 or 11:42, or equivalent. Same as East Asian Languages and Literatures 30:14.

1128: Introduction to Ancient Art 3 s.h.
Art and architecture of Mediterranean civilizations from Hellenistic times to age of Renaissance. Prerequisites: 11:37, 11:20 or 11:42, or equivalent. Same as Greek 14:20.

1140: Introduction to Medieval Art 3 s.h.
Art and architecture in Europe from 300 to 1400 A.D. Prerequisites: 11:37, 11:20 or 11:42, or equivalent.

1147: Introduction to Renaissance Art 3 s.h.
Art and architecture in Europe from early Renaissance to 1600. Prerequisites: 11:37, 11:20 or 11:42, or equivalent.

1153: Introduction to Baroque Art 3 s.h.
Art and architecture in Europe from 1600 to 1750. Prerequisites: 11:37, 11:20 or 11:42, or equivalent.
Art and Art History

191:178 Chinese Sculpture
3 s.h.
From Neolithic to Yuan: stylistic analysis, cultural, historical and iconographical overview. Same as Asian Languages and Literatures 31:135.

191:180 History of Prints
3 s.h.
Present the print as a dynamic art form and one of the most influential carriers of styles and iconography from area to area, particularly in Europe from Renaissance.

191:188 Theories in Art History
3 s.h.

191:194 Readings in Art History
3 s.h.

191:201 Art Theory I
3 s.h.
Advanced studies in theory and criticism of art with emphasis on 20th century and artistic works in a cultural context.

191:207 Theory and Form in Western Art
3 s.h.
Relationship of art and theory in painting and sculpture in Europe from Classical period to Renaissance.

Courses Primarily for Graduates

191:210 Seminar: Problems in Egyptian and Mesopotamian Art
3 s.h.

191:215 Advanced Oriental Art I: India
3 s.h.
Same as Asian Languages and Literatures 29:268.

191:216 Seminar: Problems in Oriental Art
3 s.h.
Same as Asian Languages and Literatures 29:253.

191:229 Seminar: Problems in Ancient Art
3 s.h.
Same as Greek 14:120.

191:233 Seminar: Problems in Early Christian and Byzantine Art
3 s.h.
Same as Greek 14:212.

191:234 Seminar: Problems in Medieval Art
3 s.h.

191:234 Seminar: Problems in Northern Renaissance Art
3 s.h.

191:237 Seminar: Problems in Italian Renaissance Art
3 s.h.

191:238 Italian Renaissance Sculpture
3 s.h.

191:239 Venetian Painting
3 s.h.

191:239 Seminar: Problems in 19th-Century Art
3 s.h.

191:239 Seminar: Problems in Modern Art
3 s.h.

191:268 Seminar: Problems in American Art
3 s.h.

191:289 Art History Workshop I
1 arr.

191:293 Art History Workshop II
1 arr.

191:327 Seminar: Methodologies of Art History and Criticism
3 s.h.
Use of library and other research resources; efficient types of methods and texts; history and criticism and their varying research requirements; scholarly presentation of written work. Same as History 10:253.

191:320 Directed Studies
1-3 s.h.

191:333 MA. Thesis
1-3 s.h.

191:335 M.F.A. Thesis
1-3 s.h.

191:346 Ph.D. Thesis
1-3 s.h.

Art Studio
Primarily for Undergraduates

191:5 Elements of Art
2-3 s.h.
Not open to studio majors. For those who have little or no previous experience; during and at the completion of selected reading.

191:5 Elements of Art
2-3 s.h.
Completion of 191:11, emphasis on color. Not open to studio majors. Prerequisite: 191:11.

191:5 Art Forms I
4 s.h.
[Art forms may vary; orientation to studio environments; introduction to two-dimensional visual language and media; preparation of space and form; study of various media.]

191:5 Art Forms II
4 s.h.
For art majors only; group and individual projects in new and traditional two-dimensional media. Prerequisite: 191:5.

191:8 Analytical Drawing
2 s.h.
Study drawing using lines of visual and nonvisual forms; articulation of space; basic anatomy and its application to drawing the figure; problems in drawing in relation to systems and process; principles of pictorial organization. Prerequisites: 191:5, 191:8. May not be repeated.

191:7 Life Drawing I
2 s.h.
Drawing from human figures in varied media. Prerequisite: 191:4 or equivalent. May not be repeated.

191:9 Painting I
2 s.h.
Elementary course in painting. Prerequisite: 191:5, 191:7 or equivalent. May not be repeated.

191:10 Art Studio
3 s.h.
Introduction of three-dimensionality through study of various materials and techniques. Prerequisite: 191:4. May not be repeated.

191:12 Undergraduate Sculpture II
3 s.h.
Exterior sculpture emphasis broader and more experimental theme toward three-dimensional possibilities. Prerequisite: 191:5. May not be repeated.

191:17 Undergraduate Sculpture Workshop
1 arr.
For intermediate and advanced sculpture students with emphasis on individual work. Prerequisite: 191:16 or permission of instructor. May not be repeated.

191:20 Basic Design
3 s.h.
Fundamental principles and their application to modern products, architecture, interior, furniture and visual communications; lecture and studio projects. Prerequisite: 191:5. May not be repeated.

191:21 Problems in Design I—Form and Structure
1-3 s.h.
Materials and their formal and structural possibilities. Prerequisite: 191:20.

191:22 Problems in Design II—Form and Function
1-3 s.h.
Problems in the design of products and how they are designed; will develop modeling skills and the graphic communication skills necessary to basic project development. Prerequisites: 191:20, 191:21.

192:1 Lettering I
3 s.h.
Basic letter forms and their relation to type design; sensitivity to letter design developed through writing with broad nibbed pens, leading to brush-and-liner lettering. Prerequisite: 191:4.

192:2 Photography I
3 s.h.
Exploring communicative potential of visual material on two-dimensional surface; combining image and form; developing a visual vocabulary. Prerequisite: 191:5.

192:3 Fundamentals of Photography
3 s.h.
Use of camera, light source and darkroom; theory of photography and photographic history. Prerequisite: 192:2. May not be repeated.

192:4 Printmaking I
2 s.h.
Compositions emphasizing human figures. Prerequisite: 192:3.

192:5 Printmaking II
2 s.h.
Intermediate study in printmaking. Prerequisite: 192:4.

192:6 Undergraduate Painting Workshop
1 arr.
Individual study in oil painting with emphasis on composition of media. Prerequisites: 191:4 or equivalent.

192:7 Graphic Design I
2 s.h.
Introduction to graphic design techniques; emphasis on composition; visual organization; technique; advanced study of visual presentation. Prerequisite: 191:5 or equivalent. May not be repeated.

192:8 Graphic Design II
2 s.h.
Introduction to screen printing techniques; emphasis on composition; visual organization; technique; advanced study of visual presentation. Prerequisite: 191:5 or equivalent. May not be repeated.

192:9 Ceramics I
2 s.h.
Basic methods of forming, firing and glazing clay. Prerequisite: 191:5, 4 or permission of instructor. May not be repeated.

192:10 Ceramics II
2 s.h.
Advanced ceramic techniques in clay and glaze formulation and preparation. Prerequisite: 192:9 or equivalent. May not be repeated.

192:16 Woodworking and Jewelry I
1-2 s.h.
Basic machining and sculpting techniques in wood, metal, plastic and other materials; preparation of student's work for exhibition. Prerequisites: 191:5 or equivalent. May not be repeated.

192:19 Studio I
2 s.h.
Group-oriented investigation of post-studio art. Prerequisite or consent of 191:5.
For Undergraduates and Graduates

Note: Course numbers between 100 and 199 are offered both semesters and in the summer when sufficient. Registration for out-of-state students will be considered. Registrations for 200- and 300-level classes must be completed outside of class. With permission of the instructor, students may take more than one section of any multiple section course.

15:109 Multimedia II 3 s.h.

A continuation of Multimedia I, emphasizing individual direction, events, films, sexes, and visual documentation; exploration of new media; special section for workshop projects. Prerequisite: 15:108 or permission of instructor.

15:110 Intermedia 3 s.h.

Interdisciplinary work on individual projects in many media. Prerequisite: 15:108 or permission of instructor. 15:111 Media of the Drawing 3-2 s.h.

Variety of media; development of a personal drawing idiom. Prerequisite: permission of instructor.

15:114 Computer-Generated Graphics 3 s.h.

Use of computer as an adjunct visual tool for the artist. Prerequisite: permission of instructor.

15:115 Life Drawing II 2 s.h.

Drawing from figure model in various media. Prerequisite: 15:107 or equivalent and permission of instructor. Same as Drama 207:128.

15:116 Drawing Workshop 3 s.h.

Comprehensive drawing for advanced students; variable media. Prerequisite: 15:105 or equivalent and permission of instructor.

15:117 Watercolor Painting 3 s.h.

Prerequisite: 15:105 or equivalent.

15:118 Painting I 3 s.h.

Prerequisite: 15:105 or equivalent.

15:119 Painting Workshop I 3 s.h.

Comprehensive painting for advanced students; variable media. Prerequisite: 15:105 or equivalent.

15:120 Documentary Photography 3 s.h.

In-depth study of photographic media with a focus on social issues. Prerequisites: 15:105 or equivalent. 15:121 Studio Seminar I 4 s.h.

Historical and critical study of art and visual culture with a focus on social issues. Prerequisites: 15:105 or equivalent.

15:122 Photographic Media Techniques 2 s.h.

Special topics in the history and techniques of photography. Prerequisites: 15:105 or equivalent.

15:123 Intermedia Seminar 1 s.h.

Class discussion of advanced and workshop projects from other areas related to participatory and interactive art. Prerequisites: 15:105 and 15:121.

15:124 Design Seminar 1 s.h.

Class discussion of advanced and workshop projects from other areas related to participatory and interactive art. Prerequisites: 15:105 or equivalent and permission of instructor.

15:125 Film Laboratory 3 s.h.

Fundamental techniques in filmmaking: equipment, editing, editing and permission of instructor. 15:126 Graphic Design II 3 s.h.

Introduction to graphic design; converting monochrome to type, designing for the printing process. Prerequisite: 15:128.

15:134 Photo-Engraving 3 s.h.

Silk screen printing of photographic images on a variety of surfaces. Prerequisite: 15:128.

15:135 Graphic Design Workshop 3 s.h.

Advanced problems in typography; calligraphy; individual projects; basic design and production; architectural graphics. Prerequisites: 15:134 or permission of instructor.

15:136 Advanced Problems in Photography 3 s.h.

Advanced problems in photography; special section for printmaking and graphic techniques. Prerequisites: 15:131 or permission of instructor.

15:137 Environmental Design II 3 s.h.

Design in relation to the human environment—psychology and physiology—and its relation to physical environment and architectural and mechanical considerations. Prerequisites: 15:130 and 15:134 or permission of instructor.

15:141 Interior Design I 3 s.h.

Introduction to interior design and its relationship to architecture in the environment and in the human context; use of color, materials, furnishings and lighting in selected projects. Prerequisites: 15:1, 15:12, 15:22.

15:142 Interior Design II 3 s.h.

Design and development of products for mass consumption; special attention to new developments in technology and their role in human habitation. Prerequisite: 15:141.

15:144 Industrial Design II 3 s.h.

Design and study of selected industrial products. Prerequisites: 15:1, 15:12, 15:22.

15:148 Advanced Problems in Design 3 s.h.

Advanced problems in design to meet specific needs, in terms of production and marketing; special attention to specific design needs. Prerequisites: 15:147 or permission of instructor.

15:151 Graduate Sculpture 3 s.h.

Sculpture in the round; introduction to the problems of sculplure in the round. Prerequisite: 15:105 or permission of instructor. 15:152 Sculpture Workshop 3 s.h.

Sculpture in the round. Prerequisite: 15:105 or permission of instructor. 15:160 Advanced Sculpture 3 s.h.

Sculpture in the round; introduction to the problems of sculpture in the round. Prerequisite: 15:105 or permission of instructor. 15:161 Ceramics 2-3 s.h.

Ceramic techniques in the area of fine art and design. Prerequisites: 15:105 and 15:121. 15:162 Ceramics Laboratory 1 s.h.

Ceramic techniques in the area of fine art and design. Prerequisites: 15:105 and 15:121. 15:170 Creative Writing 3 s.h.

Introduction to creative writing; emphasis on imagination, innovation, and free expression. Prerequisites: 15:105 and 15:121.

15:181 Visual Communication and the Environment 3 s.h.

Explorations of the visual environment; implications for design; visual problems related to human habitation. Prerequisites: 15:1, 15:12, 15:22.

15:182 Visual Communication and the Environment II 3 s.h.

Continuation of 15:181, including the design process. Prerequisites: 15:181.

15:183 Environmental Design I 3 s.h.

Introduction to the design of the environment—psychology and physiology—and its relation to physical environment and architectural and mechanical considerations. Prerequisites: 15:130 and 15:134 or permission of instructor.

15:184 Environmental Design II 3 s.h.

Design in relation to the human environment—psychology and physiology—and its relation to physical environment and architectural and mechanical considerations. Prerequisites: 15:130 and 15:134 or permission of instructor.

15:185 Environmental Design III 3 s.h.

Design and study of selected industrial products. Prerequisites: 15:1, 15:12, 15:22.

15:186 Environmental Design IV 3 s.h.

Advanced problems in design to meet specific needs, in terms of production and marketing; special attention to specific design needs. Prerequisites: 15:147 or permission of instructor.
Botany

99:130 Metabolism 3 s.h.
99:131 Molecular Genetics 3 s.h.
99:140 Experimental Biochemistry 4 s.h.
99:155 Senior Research Independent Study Honors at least 5 s.h.
99:190:203 advanced biocourses (At least 6 s.h.
(Additionally, 99:135 Physical Biochemistry is a recommended elective)
Advanced science electives at least 17 s.h.

Bachelor of Arts

In addition to the College of Liberal Arts general education requirements, the Bachelor of Arts degree in biochemistry requires:
22M:13 Mathematics for the Biological Sciences 3 s.h.
22M:16 Calculus for the Biological Sciences 3 s.h.
29-2, 2 College Physics 8 s.h.
Biological sciences 9-10 s.h.
37:3 Principles of Animal Biology, and 21:1 Introduction to Botany or 61:157 General Microbiology 17-20 s.h.
Chemistry 4-1 and 4-4 Principles of Chemistry I, II, or 4-5 Principles of Chemistry and 4-6 Elementary Chemistry Laboratory, 4-121 Organic Chemistry I and 4-130 Elementary Physical Chemistry 8 s.h.
Biochemistry 99:120 The Chemistry of Biological Materials 3 s.h.
99:130 Metabolism 3 s.h.
99:131 Molecular Genetics 3 s.h.
99:140 Experimental Biochemistry 3 s.h.
99:190:201 advanced courses 2-5 s.h.
Advanced science courses 19 s.h.

Additionally, B.A. students intending to go on to advanced degrees in the biological or health sciences should include four semester hours of senior research among their electives.

Teacher Certification

Biochemistry students planning to qualify for teacher certification should include 75:100 Introduction to Secondary School Teaching, 75:151 Methods: Physical Science and 75:152 Methods: Biological Science among the College of Education courses taken to meet certification requirements.

Graduate Programs, Facilities, Faculty, Courses

See "Biochemistry" in the College of Medicine section of the Catalog for descriptions of the Department’s graduate programs and facilities and for its faculty roster and course offerings.

Botany

Department Chairman: Robert L. Hubary
Degree offered: B.B. M.S., Ph.D.

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

Some recent graduates of the B.A. program at Iowa have entered careers as technicians in pharmaceutical research laboratories, in plant breeding stations and in seed production laboratories. Most of those who have gone on to advanced degrees are in the teaching profession. One is a curator of horticulture with the New York Botanical Gardens, where he participates in regular plant exploration trips in the Andes 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 indicate the variety of professional opportunities for botany graduates.

The Bachelor of Arts Degree

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

Introduction to Botany 4 s.h.

One course in each of the following areas:
Genetics (2:102, 2:104, 2:160)
Biology of Vascular Plants (2:111, 2:113, 2:120, 2:121)
Biology of Non-Vascular Plants (2:105, 2:106, 2:107)

Two 100-level courses in botany or cognate fields (zoology, biochemistry, microbiology) 8 s.h.

Organic chemistry/biochemistry 16 s.h.

Mathematics: 22M:15 Mathematics for the Biological Sciences, 22M:20 Elementary Functions or equivalent 3 s.h.


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 3.6 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 (2:124 Honors in Botany) during the senior year, maintain the grade-point averages required for admission to the program, and pass an Honors 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 guid-
ance committee to help set goals for graduate training and to plan the course requirements necessary to achieve them. Candi-
dates for advanced degrees in botany are required to perform some services as teachers or research assistants.

The Master’s Degree in Botany

Advanced study may be undertaken with emphasis in anatomy, botany, cell biology, ecology, genetics, development and morphology, mycology, palaeobotany, physiology, phytobiology or taxonomy. The master’s degree may be earned by completing at least 30 semester hours of graduate study, including six sem-
ester hours in 2/225 Research Botany. The preparation of a
thesis is optional.

Each student must:

- Submit a program of study approved by a guidance com-
mittee consisting of three members of the graduate faculty, any
one of whom may be from another department. Normally,
the program of study should be prepared during the first
semester in residence as a regular graduate student.

- Complete at least 16 semester hours of graduate courses in
botany, as prescribed by the guidance committee. No more
than six semester hours of 2/225 Botany Research and
2/229 Thesis Botany may be used to fulfill this require-
ment.

- Achieve a grade-point average of 3.0 on all courses—other
than research—attempted up to the time of the final exam-
ination.

- Take a written and oral examination during the term in
which he or she is to graduate. These examinations cov-
er the courses and research experience the student has had up
to this point.

Master’s Degree in Biology

A student who has been regularly admitted to a graduate pro-
gram in either the Department of Botany or the Department of
Zoology may elect a course of study leading to the Master of
Science degree in biology. The M.S. degree in biology requires
at least 32 hours of graduate study without thesis, or 20 hours
with thesis. Non-thesis candidates must take 4 or 5 semester
hours of research, and thesis candidates must take at least 6 to 8
semester hours of research. Research credit can be earned by
taking 2/225 Research: Botany, 37/199 Introduction to Research
and 37/303 Independent Study: Zoology. In addition, each stu-
dent must:

Submit, during the first semester in residence or in the pro-
gress, a program of study to be approved by the department
in which the student is enrolled. The program must include at
least 8 semester hours of graduate courses in each of the two
departments, exclusive of research. Six to 10 hours may
be taken in supportive areas including biochemistry, microbiolo-
gy, geology and mathematics.

Achieve a grade-point average of 3.0 in all courses other than
research attempted at the time of the final examination.

Pass a written comprehensive final examination covering the
graduate program, followed by an oral examination for thesis
candidates based mainly on the work reported in the thesis.

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.

Normally the student proposes his or her Ph.D. program pro-
posal during the first semester in residence. The student’s guid-
ance committee prescribes formal courses or proficiency
requirements, taking into account the student’s background, ed-
cational and career goals, and current or prospective research
interests. The committee also establishes which portion of the
formal coursework or specific proficiencies (such as ability to
read certain foreign languages) will be required before the stu-
dent is permitted to take the oral and written comprehensive ex-
aminations. The comprehensive examinations cover the
student’s field of concentration and research.

At least 72 semester hours of graduate credit are required.
The doctoral thesis must be submitted before the final exami-
nation, which is primarily a defense of the thesis and the meth-
ods of obtaining the data.

Graduate Admission

General Requirements

All students should become thoroughly familiar with the re-
quirements of the Graduate College. Students who plan to apply
for fellowships are advised to take the advanced biology part of
the Graduate Record Examination.

Departmental Requirements

If the entering student has little or no training in botany or biol-
ogy, some introductory coursework will be required in accor-
dance with the academic needs of the individual. In addition,
mathematics at the level of analytic geometry and a year of or-
ganic chemistry are usually required of entering students. Cours-
es 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.

Special Facilities and Activities

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

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

An herbarium for research and general study includes collec-
tions of more than 200,000 specimens. These standard speci-
cimens include extensive collections of seed plants and ferns from
Iowa and the Midwest, special research specimens from Mexico.
and Central America, the Conard herbarium of bryophytes and the Martin collection of fungi and slime molds.

Within a few miles of the campus, a forest preserve is available for field trips and experimental projects. A biological field station is on Lake Okofoj in northern Iowa which offers excellent conditions for summer study in field biology, limnology, physiology, aquatic ecology and plant taxonomy. Students frequently participate in field expeditions to the Canadian North, Mexico and Central America. Qualified graduate students may use the University Computer Center in their research projects.

Faculty

All members of the Botany faculty are involved in teaching both undergraduate and graduate courses, plus tutorial counseling of students conducting independent projects. The specialties of the faculty include a wide range of disciplines in the plant sciences, in addition to considerable collaboration in research and teaching with colleagues in cognate areas such as biochemistry, geology, microbiology and zoology.

Faculty Roster

Professor Holby, Mur; associate professor Carlson, Cudah, Dean. Emich, Melcher, Schublin, Spalding, Szytkyri.

Courses

Primary Course for Undergraduates

Botany 1101 Introduction to Botany 4 cr. Cultural experience with major types of plant life; structure, function, reproduction and interactions in plants. Recommended for students in general science, biology and those preparing for work in science. May be continued as 211 or 212 or 213 to satisfy the major course core requirement.

Botany 211 Botany of Land Plants 4 cr. The land plants are treated emphasizing their structure, evolution and major roles in various ecosystems. Prerequisites: 211 or equivalent.

Botany 314 Geology of the Land Plants 4 cr. Classification, recognition and reproduction of angiosperms and gymnosperms of terrestrial origin, the ecology of woodyland and prairie communities treated. Field work where feasible. Prerequisites: 211 or equivalent.

Botany 316 Plant Propagation 2 cr. Lectures and laboratory relating basic plant biology to standard horticultural and agricultural practices. Topics covered include seed and seedling development, control of growth, nutrition, climate control and reproductive processes.

Botany 318 Introductory Genetics 2 cr. Basic principles of Mendelian and modern genetics; mechanisms of heredity with examples in plants, animals and humans.

Botany 4100 Plant Taxonomy 4 cr. Principles of plant taxonomy as illustrated by study of various wild and cultivated plants of major ecological and economic importance. Prerequisites: 211 or equivalent.

Botany 3120 Genetics 2-4 cr. Structure, behavior and function of hereditary material; laboratory illustrates basic patterns of inheritance. Prerequisites: 211 or Zoology 313 or equivalent.

Botany 3140 Cyogenetics 3 cr. Structure and function of chromosome, studies of monospecifics, aneuploidy, alterations, including telocentric, tetrad, inversions, duplications, deficiencies, translocations and fusions; introduction of the chromosomal significance of human, cattle, tomato, maize, cucumber elements. Prerequisites: 2102 or 3138.

Botany 4100 Phosphates 6 cr. Structure and function of phosphates, fat-digested fats and related materials, including metabolism, fat-digestive systems, fat digestion, excretion, excretion of water-soluble materials, concentration of urine and excretion of fat-digestible materials. Prerequisites: 3101 or equivalent.

Botany 4101 Physiology of Land Plants 4 cr. Structural and functional adaptation of algae, freshwater and saltwater, including metabolism, growth, reproduction, excretion and excretion of toxic materials. Prerequisites: 2131 or equivalent.

Botany 4106 Mycology 4 cr. Morphology, physiology and ecology of fungi with study of representative groups. Prerequisites: 4101 or equivalent.

Botany 4107 Plant Physiology 4 cr. Experimental study of function in plants: cell physiology, water metabolism and chemical synthesis. Prerequisites: 2121 and organic chemistry.

Botany 4110 Plant Morphology 4 cr. Experimental study of internal structure, metabolism, growth and development of land plants. Prerequisites: 2131 and organic chemistry.

Botany 4111 Plant Zoology 4 cr. Adaptations and interactions between organisms of their environment; special topics include insect-plant interaction, marine, climate, history of zoology, micro-structure differentiation, invertebrates, molluscs and their evolution. Prerequisites: 2101 or equivalent; a year's work in general biology.

Botany 4112 Plant Anatomy 4 cr. Structure and organization of land plant tissues, emphasis on plants of economic importance with consideration of development and cells comprising these tissues. Special topics between structure and function. Prerequisites: 2101 or equivalent.

Botany 4114 Ultrastructural Plant Cytophology 2 cr. Lectures and laboratory work on cell walls and cellular organization with emphasis on the relationship of their structures to their functions; isolation of cellular components and experimental transformation of histological evidence obtained by light and electron microscopy. Prerequisites: 2101 or equivalent.

Botany 4115 Biophysical Microtechniques 4 cr. Lectures and practical instruction in preparation of tissue samples for microscope slides and methods of mounting, staining and mounting plant material; standard cytological techniques; necessary for research in various types of biology. Prerequisites: 2101 or equivalent.

Botany 4116 Botanical Microtechniques 4 cr. Special procedures, preparation of permanent microscopic slides from tissues not easily obtained in paraffin; preparing of permanent tissue with staining material; micro-structure differentiation and electron microscopy of cell wall structure, internal and external ultrastructure, techniques of cell biology. Prerequisites: 2101 or equivalent; a year's work in general biology.

Botany 4117 Experimental Techniques 4 cr. Principles of experimental techniques; special topics in preparation of slides for light and electron microscopy; ultrastructure and electron microscopy; special topics in cell biology. Prerequisites: 2101 or equivalent; a year's work in general biology.

Botany 4118 Experimental Techniques 4 cr. Principles of experimental techniques; special topics in preparation of slides for light and electron microscopy; ultrastructure and electron microscopy; special topics in cell biology. Prerequisites: 2101 or equivalent; a year's work in general biology.

Botany 4120 Paleobotany 4 cr. Morphology, structure and function of fossil plants; their evolution, radiation, physiological relationships and geographical distribution. Prerequisites: 2101 or equivalent; a year's work in general biology.

Botany 4125 Paleobotany 4 cr. Morphology, structure and function of fossil plants; their evolution, radiation, physiological relationships and geographical distribution. Prerequisites: 2101 or equivalent; a year's work in general biology.

Botany 4126 Honors in Botany 6 cr. Senior research; prerequisite: permission of department and grade-point average 3.0 overall, 3.5 in botany.

Botany 4128 Fundamental Genetics 4 cr. Modern and classical genetics; techniques, development of genetic manipulation; population and evolutionary aspects. Prerequisites: 3101 or equivalent; recommended honors work. Prerequisites: 3128 or Zoology 313 or equivalent.

Botany 4129 Fundamental Genetics Laboratory 2 cr. Laboratory exercises in problems of genetics. For majors majoring in biology, honors, or students and others with appropriate interest. Co-requisites: 3128 or equivalent; same as Zoology 313.

Botany 4131 Plant Physiology 4 cr. Historical development of the study of plant physiology, the concept of plant physiology as a whole, principles illustrated by the study of osmotic regulation, the role of mineral nutrients in plant metabolism.

Botany 4132 Plant Physiology 4 cr. Historical development of the study of plant physiology, the concept of plant physiology as a whole, principles illustrated by the study of osmotic regulation, the role of mineral nutrients in plant metabolism.

Botany 4133 Plant Physiology 4 cr. Historical development of the study of plant physiology, the concept of plant physiology as a whole, principles illustrated by the study of osmotic regulation, the role of mineral nutrients in plant metabolism.
Courses at Lakeside Laboratory

L190 Plant Biology 8 a.h.
Introductory to soil, plant and animal ecology, especially field work. Intended for students with a basic background in biology who desire the field experience.

L192 Aquatic Ecology 5 a.h.
Local aquatic plants and wildlife, including analyses of ecosystems; stress basic ecological principles. Field work and methods are studied with theory, but the course is a scientific laboratory, intended for students with broad biological backgrounds including some math, chemistry and physics.

L132 Aquatic Ecology 5 a.h.
Individual project work. Continuation of L190.

L106 Plant Taxonomy 8 a.h.
Basic principles of classification and evolution of vascular plants; exploration of taxonomic tools techniques and native flora; stress field collection and group projects.

L105 Fern and Algae 5 a.h.
The low-lat piano region is one of the richest colonizing area in the world for fleshy, leafy, liverworts; are collected daily by the staff and brought into the laboratory for examination; not descriptive, but descriptive; not descriptive, no laminae observed.

L113 Research 5 a.h.

L112 Independent Study 5 a.h.

L114 Independent Study 5 a.h.

L115 Field Mycology 5 a.h.
Identification and classification of the common fungal techniques for identification, preservation and culture are practiced with members of the various groups.

L117 Ecology and Systematics of Tissue 5 a.h.
Field morphology in the study of tissue from a variety of habitats to gain familiarity with some of the many species, species environmental factors affecting growth and development, and techniques in collection and preparation of various samples.

L119 Biology of Lower Green Plants 5 a.h.
Field and laboratory investigations of mosses, liverworts, club mosses, hornworts and ferns.

L140 Aquatic Plants 5 a.h.
Field studies of various aquatic organisms with various plants; comparison of identification and examination of environmental factors controlling distribution: individual or group projects. Intended for students with some background in either botany or ecology.

Chemistry

Department Chair: Edward R. Duke

Chemistry is a basic science involving the study of substances and the changes they undergo. Wherever 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 more numerous in work on environmental and health problems.

A chemistry graduate with a Bachelor of Science or Arts degree and the required education courses may teach in the high school level. State laboratories and agencies are employing chemical interns. In industry, the chemical with a bachelor's degree may find employment in research in development work, analysis in a research or testing people; or in administrative jobs in business. Chemistry is 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, biology, microbiology, zoology, pharmacy, pharmacology, physiology, medicine, medicinal chemistry, metallurgy, geology, oceanography, geochemistry and chemical engineering.

Chemistry courses in the first two years of the bachelor's program provide a good background in general and organic chemistry for life science majors. A special sequence of courses is available for students in programs requiring a well-rounded terminal year of general chemistry. Core courses (one offered jointly with the physics department) and a contemporary issues course provide an introduction and appreciation of chemistry for the non-science major.

Students majoring in chemistry must meet the basic skills and core course requirements for a baccalaureate degree, and complete a structured program of chemistry courses. Before the junior year, the student will take from 16 to 18 semester hours of chemistry courses, and when courses necessary to do advanced work in chemistry. A serious 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 future demands 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**

4/1 or 4* Principles of Chemistry I, II
4/6 Elementary Chemistry Laboratory
4/121, 122 Organic Chemistry I, II
4/111, 112 Analytical Chemistry
4/131, 132 Physical Chemistry I, II
4/141, 142Intermediate Chemistry Laboratory I, II
4/143, 144 Advanced Inorganic Chemistry
4/170 Advanced Inorganic Chemistry
4/161 Introduction to Senior Research
4/162 Senior Research
4/50 Chemistry Orientation

*May be satisfied by departmental examination.

**Mathematics**

Selected courses to include integral calculus. (Mathematics 22M:35, 36 Engineering Mathematics I, II recommended, 22M:25, 26 Calculus I, II acceptable.)

**Physics**

Two semesters (either 29:1,2 College Physics or 29:17,18 Introductory Physics I, II; 29:17,18 are recommended).

**Foreign Languages**

German 13:11 First-Year German, 12 Second-Year German or the equivalent of two semesters of German.

**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. Student selecting 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**

4/1* or 4* Principles of Chemistry I, II
4/6 Elementary Chemistry Laboratory
4/121, 122 Organic Chemistry I, II
4/111, 112 Analytical Chemistry
4/131, 132 Physical Chemistry I, II
4/141 Intermediate Chemistry Laboratory I
4/143 Advanced Chemistry Laboratory I
4/30 Chemistry Orientation

*May be satisfied by departmental examination.

**Mathematics**

Selected courses to include integral calculus. (Mathematics 22M:35, 36 Engineering Mathematics I, II recommended, 22M:25, 26 Calculus I, II acceptable.)

**Physics**

Two semesters (either 29:1,2 College Physics or 29:17,18 Introductory Physics I, II; 29:17,18 are recommended).

**Foreign Languages**

A minimum of 4 semesters 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. (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:

4/1* or 4* Principles of Chemistry I, II
4/6 Elementary Chemistry Laboratory
4/7, 8 General Chemistry I, II
Graduate Study

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 four areas of chemistry. This can be accomplished by receiving a minimum 2.75 grade-point average in the courses listed below or by departmental examination. Candidates for the M.S. Degree are required to obtain minimum grades of C in three of these courses or to meet the requirement by examination.

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

Master of Science Programs

The Department offers the M.S. degree, with or without thesis, in the areas represented above. Both programs require at least 30 semester hours. In the thesis program, this includes no more than 30 semester hours in research. The oral examination for the M.S. degree with thesis consists of a defense of the written thesis. A minimum grade-point index of 2.5 is required to be admission for the master's examination. The examination for the M.S. degree without thesis covers graduate coursework.

Doctor of Philosophy Program

A program of study for the Ph.D. degree in the areas previously listed consists of a minimum of 72 semester hours of graduate work. The program of study includes the previously specified courses and courses in the major field of interest. The student must present a thesis covering the research.

An oral comprehensive examination in defense of a prepared research proposition is required 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 2.75 are admitted to the oral examination upon presentation and preliminary approval of their research proposal.

Six months after the Ph.D. oral examination, another examination is given to evaluate the candidate's research program. A final examination is required of all candidates for the Ph.D. degree. The Ph.D. thesis and a manuscript of the publishable portion of the thesis must be defended satisfactorily before an examining committee.

Interdisciplinary Programs

The Department of Chemistry cooperates in interdisciplinary programs in applied mathematical sciences and in chemical physics. (See "Graduate College"). Students with undergraduate degrees in chemistry, physics, mathematics or engineering are eligible.

Languages

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

Teaching

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

Admission

The Department requires the completion of a bachelor's degree in chemistry for admission to graduate study in chemistry. The admission requirements of the Graduate College must also be fulfilled (see "Graduate College").

Facilities

The Department is housed in a five-story building containing two auditoria, 10 lecture rooms, 21 undergraduate laboratories, 48 graduate research laboratories, and a number of special purpose instruction rooms. Modern scientific equipment valued in excess of $2.5 million is available for research.

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

Faculty Roster

Professors: Barrette, Buckle, Burton, Doyle, Dufke, Fina, Fink, Flies, Dust, Warnock, Associate professors: Barrette, Buchanan, Cacer, Coffin, Coovacillis, Davis, Egman, Frank, Friedrich, Nair, Stwallley; assistant professor: Sando, Tandy.

Courses

Primary Undergraduates

41 Principles of Chemistry 1 3 a-h.
42 Principles of Chemistry 2 3 a-h.
46 Principles of Chemistry 3 3 a-h.
47 General Chemistry Laboratory 2 3 a-h.

46 Principles of Chemistry 4 3 a-h.
47 General Chemistry Laboratory 2 3 a-h.

For beginning students who plan to take more than two semesters of chemistry, they have had a good high school chemistry course. Permissible or equivalent: 4-6.

48 Chemical Laboratory 2 3 a-h.

For beginning students who plan to take one or two semesters of chemistry.
4.37 Molecular Spectroscopy 3 s.h.
Application of infrared, ultraviolet and Raman spectroscopy to chemical problems. Prerequisite: 4.12 and consent of instructor.

4.365 Physiological Chemistry Topics 1-3 s.h.
Statistics of linear polymers, or high-temperature chemistry, or modern topics as elected by the instructor. Each topic may be repeated for credit when topic varies. Prerequisite: 4.132.

4.364 Diffusion Analysis 3 s.h.
Theory and methods of diffusion of electrolytes, neutrals and X-rays by gas, liquid and solid media, sorption and displacement and compositional methods. Prerequisite: consent of instructor.

Seminars
The following courses present discussions of latest advances in the various fields of chemistry. Prerequisite: consent of instructor.

4.381 Seminar: Analytical Chemistry 0-1 s.h.
4.382 Seminar: Inorganic Chemistry 0-1 s.h.
4.383 Seminar: Organic Chemistry 0-1 s.h.
4.386 Seminar: Physical Chemistry 0-1 s.h.

Research
The following courses present the latest work for advanced degrees. Conference and laboratory work arranged. Prerequisite: consent of head of Department and major professor.

4.391 Research: Analytical Chemistry arr.
4.396 Research: Physical Chemistry arr.

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

Undergraduate Program
In the broadest sense, classics is the study of 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 interpret the contribution of the ancient world to life in the present and the future. A training in classics is primarily humanistic, for it concentrates upon the aspects of man which have made him a civilized human being. An undergraduate degree in classics gives a solid foundation for law, history, art, philosophy and religion, as well as for advanced work in classics. Recent graduates have become secondary and university teachers, lawyers, doctors, librarians, museum curators and bankers.

Undergraduate Requirements
The Department offers majors in Greek, Latin, classics (combines the two) and, jointly with other departments, ancient civilization.

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:

14.1 and 14.2 Elementary Greek 8 s.h.
14.11 and 14.12 Second-Year Greek 6 s.h.
14.171 Elementary Greek Composition 3 s.h.

The remaining hours are usually satisfied by third-year Greek, "Horos and Hestia," and fourth-year Greek, "Greek and Persia," and "Fifth Century Athens." A student majoring in Greek 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 20.15 Latin Review, 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 153 B.C. to 64 A.D. When Rome established its hegemony over the Mediterranean basin and laid the foundations for law and the republican form of government which have persisted into the modern world.

Major in Classics (Greek and Latin)
Thirty-six semester hours are required, 24 in one language and 12 in the other. The course requirements for the major language are the same as those indicated for Greek or Latin. For the minor language the student needs at least two reading courses (six semester hours) 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.

Major in Ancient Civilization
(Sponsored by the School of Art and Art History and the departments of Classics, History and Religion)
The major concentrates on the axial c civilization of the Mediterranean world and draws on courses currently offered by various departments of the University. It is not primarily a preparation for a graduate degree program; nevertheless, it could be used as a very sound basis for the preparation for teachers at the secondary and junior college levels. In addition to the normal college requirements for the B.A. degree, the following are the specific requirements of the major:

Ancient art 6 s.h.
Ancient history 6 s.h.
Ancient philosophy or religion 6 s.h.
Classics—either courses in translation or upper division undergraduate courses in Latin or Greek 6 s.h.
Appropriate courses in art, history, philosophy, religion or linguistics 3 s.h.
Senior seminar 3 s.h.
Core Requirements

Undergraduates who major in Greek, Latin classics or ancient civilization are excused from four semester hours of the literature core requirement for the College of Liberal Arts, but must complete 14:1 The Interpretation of Literature. Ancient civilization majors' core requirements in the historical-cultural sequence are limited to four semester hours.

Honors

For exceptional students, two courses are offered in honors reading, one each semester of the senior year, for these semester hours of credit each semester. 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.

Graduate Program

For the graduate requirements of the Graduate College, including the comprehensive examinations, see "Graduate College."

Graduate students in classics may include in their program no more than six semester hours of courses numbered 101-160 and six semester hours of courses numbered 161-199.

M.A. in Greek, Latin or Classics

A minimum of 30 semester hours of courses numbered 101 and above is required. Candidates in Latin who have had no Greek are normally expected to include at least elementary Greek in their programs. In addition, the course 14:201 or 20:201 (P: 201. Pre-seminar: 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

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 adviser and approved by the Department; a tested reading knowledge of German and French; passing written comprehensive examinations on ancient history, on a special field and on Greek or Latin literature and a two-hour oral examination on Greek or Latin literature; and writing and defending a dissertation embodying original research or interpretation of a classical subject.

Required Courses are:

14:201 or 20:201 Pre-seminar: Introduction to Advanced Study 3 s.h.

One of the following two areas:

A. Ancient art, philosophy or religion

3 s.h.

B. Ancient linguistics, Sanskrit or philosophy

3 s.h.

C. Latin seminary

6 s.h.

D. Greek seminar

6 s.h.

One of the seminars (six semester hours) will normally be taken after 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 Greek and Roman civilization. The Department has a varied collection of slides on classical subjects, and a small library.

Associated with the Department, the Classical Museum contains a valuable collection of coins, vases, and faience in bronze from Mycenae, Pylos and Herculaneum.

The University 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 is also a contributing member of an international group which is sponsoring the uncovering and publication of information about the ancient mosaics of Tunisia. Annually a team from the University 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, through their research, suggest the diverse possibilities which exist in the field of classics for the study of literature, history or ancient art and archeology.

Faculty Roster

Professors Goldblatt, Hornbly; professor emeritus Nyhakkens; associate professors Alexander, Holmström, Jackson, assistant professors Bush, Flickinger, Gardner.

Courses

Greek

For Undergraduates Only

Students wishing to satisfy the B.A. foreign language requirement by studying Greek should use 14:12 and 14:11-12.

14:11 Elementary Greek

4 a.h.

Fundamentals of Ancient Greek and basic concepts of Greek civilization.

14:12 Elementary Greek

4 a.h.

Continuation of 14:11. No credit for Greek majors are paid.

14:13 New Testament in Greek

3 a.h.

A special reading of selections from the Greek New Testament may be taken with or after 14:12.

14:12 Second-Year Greek

3 a.h.

Reading of selected texts of Greek prose and poetry. Prerequisite: 14:12 or equivalent.

14:13 Second-Year Greek

3 a.h.

Continuation of 14:11, which is a prerequisite.

For Undergraduates and Graduates

14:12 Homer and Hesiod I

3 a.h.

For third-year Greek majors; selections from Homer's Iliad and Odyssey and from Hesiod's Works and Days and Theogony read in Greek; complete works read in English.

14:12 Homer and Hesiod II

3 a.h.

Continuation of 14:12, which is a prerequisite.

14:184 Greece and Persia

3 a.h.

For students who meet the fourth-year requirements of Greek; more reading in the Persian wars, course of the war, and the immediate aftermath; Aeschyle's Perses and selections from Herodotus read in Greek; supplementary reading in English.

For Undergraduates Only
Doctor of Philosophy Degree

Students seeking the doctorate in comparative literature study at least three literatures. One literature is studied in historical depth together with limited areas of specialization in two other literatures. An interdisciplinary area of concentration is encouraged. All candidates devote a portion of their program to comparative study which brings the several areas into focus. Specific areas and interrelations of these areas are selected by the student in consultation with appropriate faculty members.

Some typical critical and comparative areas are:
- European Renaissance
- Romanticism
- Style and the absurd in the novel
- Narrative theory
- Symbolic poetics and modern literature
- Post-Russian philosophy and literature
- Satire, rhetoric and the theory of social interaction
- Literature, history and criticism
- Literary-critical and psychoanalytic theory

Dissertation

The Ph.D. dissertation should demonstrate the candidate’s ability to write a substantial piece of scholarship or criticism. A translation of a work of sufficient significance and linguistic complexity, preceded by a critical introduction, may be accepted as a dissertation. The final oral examination centers on the dissertation and its background.

Admission

Interested students who meet the requirements for admission to graduate study in the University should address the chairman of the program. Formal application is made to the University Office of Admissions.

A study of literature across linguistic boundaries requires special training in languages. A thorough knowledge of at least one foreign language is required for admission to the M.A. course of study; knowledge of at least two foreign languages is a prerequisite for doctoral study. Students are strongly encouraged to offer at least one classical language.

For further information, the procedural guide for graduate students in comparative literature is available by request from the program offices.

Faculty Roster

Professors: Inoue, Deligiorgi, Martinez-Bonet; associate professors Nagel, Spivak; assistant professors Bell, Krazeil.

Faculty Assisting in the Program

Professors Apel (French and Italian), Brown (English), Corrada (French and Italian), Dusiaip (English), Fernandez (Spanish and Portuguese), R. Hornsby (Classics), Irwin (English), Luxenburg (Russian), McCallian (English), O’Gorman (French and Italian), Whitehead (English); associate professors Chamberlain (English), Greene (French and Italian), J. Hornsby (French and Italian), Woerner (English); assistant professors C. Altman (French and Italian), Nagle (German), Perrot (Russian), Wer (Russian).

Courses

Upper Division

48/100 European Literature of the 19th Century 3 h.
International and regional perspectives on literary movements, works and authors before 1900. Some as English 8/109.

48/107 Romanticism and Style around 1800 3 h.
Focus on similarities between German and English Romantics and writers around 1800 concerning the nature of poetry, myth, reality, style, language, the role of art and voices of society.

48/113 Literary Genres in European Literature I 3 h.
How genres definitions contribute to the understanding of related literary works; may deal with one or more genres (epic, romance, satirical, historical novel, etc.). May form a two-semester sequence.

48/114 Literary Genres in European Literature II 3 h.
Continuation of 48/113.

48/129 Selected Modern Poets 3 h.
Some as English 8/138.

48/150 Literature and Society 3 h.
Some as English 8/175, School of Letters 108/150, History 16/150.

48/162 Literature and Revolution 3 h.
Trips range from literary representation to insurrection of revolution, from classic to ideology. Some as Letters 108/162.

48/175 Literature and Psychology 3 h.
Literary men, theories and theory, with emphasis on the interrelations of literary criticism, literature and psychology. Some as English 8/175, School of Letters 108/185.

48/179 Roman Satire 3 h.
Some as Letters 108/179, School of Letters 108/179.

48/195 Individual Study 3 h.
For advanced B.A. candidates with unconditional and cooperative literary projects, and for M.A. candidates in comparative literature.

Graduate Courses

48/200 Comparative Approaches I 3 h.

48/210 Studies in Style 3 h.
Some as Spanish 20/20, Greek in Spanish.

48/236 Comic Theory and Practice 3 h.
Workshop course devoted to identify and study principal notions and qualities of the comic.

48/258 Translation Workshop 3 h.
Prose or poetic translation of modern foreign language and permission of instructor. Some as English 8/250.

48/301 History of Criticism: Plato to the Romantic 3 h.
Theory of literature; emphasis on philosophical implications of theories arrived at in classical antiquity, the Renaissance and Romanticist periods, up to the age of Romanticism. Some as English 8/261, Drama 307/317.

48/332 History of Criticism: Cambridge to One 3 h.
Theory of literature from Romanticism to present. Some as English 8/322, Drama 307/317.

48/274 Seminar: Existentialist and Hispanic Literature 3 h.
Some as Spanish 307/317.

48/278 Theory and Technique of Oral Literature 3 h.
Some as Spanish 307/317.

48/279 Theory and Technique of Oral Literature 3 h.
Some as Spanish 307/317.

48/201 Comparative Approaches II 3 h.
Advanced comparative theory and method.

Comparative Literature 53
Dental Hygiene

Department Chairwoman: Paula Brite

Degree offered: B.S., M.S.

Undergraduate Program

Qualified by education and licensure, the dental hygienist applies knowledge of the basic, social, dental and clinical sciences in providing patient services for the prevention and control of dental disease.

Employment opportunities for the U of I dental hygiene graduates are numerous and varied. In addition to dental offices practice, graduates are prepared for employment as dental health educators in public school systems and in public health and community action programs.

The Bachelor of Science degree program in dental hygiene comprises two years of general education followed by two years of specialized study. Included in the general education requirements are courses in the basic and social sciences. These courses provide the student with educational preparation in disciplines relevant to specialized study in medical and dental sciences and in dental hygiene (see "Admission Requirements").

The specialized courses of study are taken during the junior and senior years. In the junior year students are enrolled in the following medical and dental related courses:

60:1 Elementary Human Anatomy
87:1 Anatomy of the Head and Neck
60:2 Human Microscopic Anatomy
82:113 Dental Therapeutics for Dental Hygienists
86:9 Dental Radiology
72:13 Introduction to Human Physiology
85:5 Pathology for Dental Hygienists
92:110 Periodontology for Dental Hygienists
82:100 Operative Dentistry Lab Hygiene

In addition, juniors learn the basic theory and clinical skills required for dental hygiene practice in 88:101 Dental Hygiene Core I and 88:102 Dental Hygiene Core II, which integrate content in basic and dental materials with the theory and practice of clinical dental hygiene.

During the senior year students advance clinical skills in the comprehensive dental clinic (88:103 Clinical Dental Hygiene). They perform clinical services working as members of dental teams. A dental office practice is simulated to provide a 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. Weekly lectures and seminars reinforce clinical learning.

Senior students also are enrolled in a community dental health core (88:104 Community Dental Health). Courses traditionally
Admission Requirements

Eligibility for admission to the professional program requires at least 63 semester hours of college coursework and at least a 2.25 cumulative grade-point average (2.4 for a transfer student). In fulfilling the 63-hour requirement, 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 (37:3 Principles of Animal Biology);
- Four semester hours of inorganic chemistry (4.7 General Chemistry I);
- Four semester hours of organic chemistry (course to include biochemistry) (4.8, 4.9 General Chemistry II, General Chemistry Laboratory);
- Four semester hours of microbiology (61:164 Microbiology);
- Three semester hours of nutrition (17:142 Nutrition);
- Four semester hours of psychology (31:1 Elementary Psychology);
- Four semester hours of sociology (34:1 Introduction to Sociology: Principles).

These prerequisites provide the educational basis for the dental hygiene courses of study. Completion of a two-year associate degree program in dental hygiene will provide an appropriate background for transfer into the baccalaureate program at Iowa.

Students 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 applications.

Graduate Program

The University of Iowa College of Dentistry’s graduate program in dental hygiene was developed in response to the need 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 the national increase in the number of dental hygiene programs, opportunities for qualified dental hygiene educators are numerous.

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 other lines of interest, including public health service and doctoral studies.

The curriculum is designed to prepare graduates to (1) develop educational policies and curricula to reflect current educational trends; (2) utilize principles of learning in the development, supervision and evaluation of instructional activities; (3) design and evaluate research and (4) assume leadership roles in the development of educational systems in dental hygiene.

The student may begin graduate study during the fall, spring or summer session. Students may complete the program in one academic year and one summer session. However, most students should expect to take three semesters and one summer session to earn the 38 semester hours of graduate credit required for the degree.

Under the guidance of the graduate adviser, the student plans a program of study. Although the plan of study is individualized to meet student needs, the curriculum design requires approximately one-third of the courses of study to be in dental hygiene education and administration and one-third in higher education.

Courses required in dental hygiene are:
- 88:201 Directed Teaching Experience
- 88:202 Directed Teaching Experience
- 88:203 Practicum I
- 88:204 Practicum II
- 88:205 Research: Dental Hygiene

Other required courses are:
- 7P:143 Introduction to Statistical Methods
- 82:224 Design and Evaluation of Research in Dental Education
- 7P:150 Educational Measurement for the Classroom Teacher
- 7H:211 Problems in College Teaching
- 7H:313 Curriculum Development in Higher Education

Comprehensive Examination

Satisfactory performance on a final written examination covering both the student’s major and a minor area of study is required to complete degree requirements.

Eligibility for Degree Candidacy

To be eligible for the graduate degree, the student must achieve a minimal cumulative grade-point average of 2.8 (A = 4).

Traineeships

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, full tuition, 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 College of Dentistry and the Dental Hygiene graduate program before applying for a traineeship.

Admission Requirements

Applicants for admission are subject to the general rules of the
Graduate College. Departmental requirements include an accept-
able score on the Aptitude Test of the Graduate Record Examina-
tion and a 3.5 minimum undergraduate cumulative grade-
point average (A = 4). The undergraduate education of the ap-
plicant should include courses equivalent to those in the under-
graduate dental hygiene major at The University of Iowa.

Facilities
U of I dental hygiene majors receive their professional prepara-
tion in the University's new Dental Science Building. This building is part of the U of I Health Center complex, one of the nation's outstanding health science teaching, research and pa-
rnt care facilities.

Faculty
Associate professor Irinie; assistant professors Dykes, Peterson, Siny, Stout, Taylor; instructors Burns, Mescher.

Courses
For Undergraduates
88:101 Dental Hygiene Core I 4 a.h.
Team-teaching approach used to integrate basic dental hygiene theory and clinical skills; didactic material and practical experiences related to complex oral prophyl-
tics: emergency procedures, oral inspection, principles of instrumentation and pro-
thetic bone care procedures; both, root and dental anatomy and properties of dental materials integrated throughout course; clinical experience includes practice on senior classmates and clinical patients.

88:102 Dental Hygiene Core II 4 a.h.
Continuation of 88:101, with emphasis on application of advanced clinical dental hygiene procedures; dental disease and its control related to application and use of dental materials and basic principles of operative dentistry.

88:103 Clinical Dental Hygiene 4 a.h.
Lectures, group, patient, and clinical experiences related to theory and practice of dental hygiene; approximately 30 hours per week open to clinical setting; stu-
dents advance clinical skills in oral prophylaxis, endodontic treatment, filling of restorations, restoration and oral health care instruction; lecture and discussions on ethics and practice management, including dental hygiene framework, ethics and jurisprudence, office procedures, and appointment control and systemic care in such clinically related topics as oral physiology, diseases, diet, dietary counseling for plaque control and clinical supplementary procedures correlated with clinical experiences.

88:104 Community Dental Health 4 a.h.
Didactic presentations, readings, discussions and field experiences related to theory and practice of community dental hygiene; exposure to learning principles of communication theories, selection and application of educational media and op-
eration of audiovisual equipment; public health structure, organization, funding, demographics and dental epidemiology; community field experiences; patient com-
nunication with emphasis on oral health education; student advanced clinical skills in preparation for teaching preventive measures and providing clinical service; scheduled weekly group discussions correlating patient scientific knowledge, dental perfor-
mations with community field experiences.

88:111 Independent Study 1-4 a.h.
Designed for students who plan to pursue additional study or to explore career Inter-
ests in dental hygiene education, research or public health.

For Graduates
88:201 Directed Teaching Experience 2-4 a.h.
Application of learning theories to teaching of dental hygiene; students assume re-
sponsibility for faculty in preparation of educational objectives, didactic material and use items for a selected undergraduate course of study; course provides a teaching-research environment of supervised teaching to involve student with focus, literacy

88:202 Directed Teaching Experience 2-4 a.h.
Continuation of 88:201; students encouraged to select a course area different from their first semester of teaching experience.

88:205 Research: Dental Hygiene 3 a.h.
Application of research methodology through development of an original research pro-
ject.

88:201 Practicum I 2 a.h.
Identification of changing concepts in dental and dental hygiene education; discur-
sion within context of general and specific course issues in dental hygiene education in relation to enrollment trends, types of programs and institutional affilia-
tions, and student selectivity criteria.

88:204 Practicum II 2 a.h.
Curriculum design applied to organization, development and evaluation of practica-
lears in dental hygiene education; elements of curriculum development, including identification of physical facilities, faculty and administration, operational costs and sources of funding for programs in dental hygiene.

East Asian Languages and Literature

Department Chairman: Marleigh Ryan
Degree offered: B.A., M.A.

Undergraduate Programs
The major purpose of the Department is to provide general courses through which all Iowa students have the opportunity to acquire knowledge and understanding of East Asian cultures.

For students who want to concentrate in this area, the depart-
ment offers two programs leading to the B.A. The first, with a major in either Chinese or Japanese, is intended for students pri-
marily interested in developing their skills in either language and in the study of literature or linguistics of either culture. The second, the Program in Asian Studies, is designed for students interested in studying any one of a wide range of disciplines as they pertain in China, Japan or India.

Graduates of the baccalaureate programs will find careers available in government, banking and commerce. The under-
graduate programs also provide a background for further study in such areas as literature, history, art, religion, political scien-
t, geography, anthropology or sociology. Career opportuni-
ties are plentiful at present and there is every indication that they will increase markedly in the next decade as trade and cul-
tural exchanges with Asia develop further.

Major in East Asian Languages and Literature
The program is designed to introduce students to the culture and civilization of China and Japan, both ancient and modern, and to give students competence in reading, writing and speaking either Chinese or Japanese. The requirements are:

- Satisfaction of the historical-cultural core requirement by completion of 39-55.56 Civilizations of Asia, 8 semester hours;
- Completion of 39-19.20 Asian Humanities I, II, 8 semester hours, of which 4 a.h. may be offered in partial satisfaction of the Liberal Arts literature core requirement;
- A minimum of 36 semester hours in courses offered by the Department of East Asian Languages and Literature;
- Demonstrated competence equivalent to that attained at the end of third year Chinese or Japanese.

Students with previous knowledge of Chinese or Japanese are regarded only by privilege. Those who demonstrate basic knowl-
dge of Chinese or Japanese are placed in the appropriate inter-
mediate or advanced language course, and choose the balance of
their 36 hours among other courses offered in the department. Those with third-year competence select their 36 hours from among advanced courses in language and culture, or from the basic language courses offered in the other language (i.e., students competent in Chinese may begin Japanese and vice versa). No credit for work done at other institutions may be applied to the 36 semester hours required at ASIA.

Students with no previous knowledge of Chinese or Japanese will satisfy the 36-semester-hour requirement with the three-year language sequence in Chinese or Japanese.

Program in Asian Studies

The major consists:

- 39:19, 20 Asian Humanities I, II 8 s.h.
- 39:101-104 Elementary Chinese, Second Year Chinese 12 s.h.

(Students who can demonstrate proficiency equivalent to that attained at the end of Chinese or Japanese 104, or equivalent to two years of Sanskrit or a modern Indian language, will be exempt from this requirement.)

- 39:193, 94 Asian Society Through Literature I, II 6 s.h. Additional courses relating to Asia 6 s.h.

(Model includes courses offered by such departments as Anthropology, Art, Comparative Literature, Geography, History, Political Science and Religion.)

Total 52 s.h.

The above courses would also satisfy the Liberal Arts core requirements in the historical-cultural area, one-half of the literature requirement, and the foreign language requirement.

Honors Program

Students who maintain a 3.0 Q.P.A. or above are eligible for the Honors Program. Application should normally be made at the beginning of the junior year. To qualify for a B.A. with Honors, the student is required to register in the special 39:191,2 Honors Tutorial, and write an undergraduate thesis while registered in 39:195 Senior Honors Thesis.

Graduate Study

M.A. Program in Asian Civilization

Graduate study in Asian civilization is designed to train students either for continuing study on an advanced level ultimately leading to the dissertation, or for preparation for high school teaching, government service or careers in business requiring knowledge of an Asian language and a broad regional background.

The program comprises 30 semester hours of coursework. All students will be required to write an M.A. thesis using Chinese or Japanese language sources. The M.A. thesis will count for no more than four of the thirty hours. Students will normally be expected to maintain at least a 3.0 grade-point average.

During the final semester of registration, the student is given a written and spoken language examination. A level of competence equal to that attained in a fourth-year modern Chinese course and in one year of a classical Chinese course for students of Chinese civilization, and in a fourth-year modern Japanese course for students of Japanese. Intensive summer institutes afford opportunities to make up language deficiencies. In addition, the student is examined on the history of the country of his or her choice (China or Japan) and in three of these areas: Chinese Linguistics, Chinese Literature, Japanese Literature, Chinese Philosophy, Japanese Anthropology, Chinese Anthropology, Japanese Politics, Chinese Art, Asian Religions.

The Department can accommodate native speakers of Chinese or Japanese who wish to work toward professional competence in Asian civilizations. A curriculum for such a student would exclude any language work, and would include 20 semester hours of course content on Asia and the four semester hours for the M.A. thesis.

All candidates are expected to fulfill the general requirements of the Graduate College.

Graduate Admission

Applicants for admission must meet the general admission requirements of the Graduate College, except that a minimum grade-point average of 2.75 is required for conditional admission, 3.0 for regular admission. In addition, applicants must submit a specimen of their writing—such as a term paper, seminar paper or graduation thesis—to the Department of East Asian Languages and Literature. All applications for graduate awards and/or admissions are due July 15 for the fall semester of December 15 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.

Library Facilities

Since 1960 the University Library has been purchasing all books on East Asia issued by major publishers in Western languages. The Library's reference collection in the Chinese and Japanese languages is more than adequate for basic research; it numbers approximately 31,531 volumes in Chinese and more than 5,000 in Japanese; it is particularly strong in literature, history, art and philosophy, and it is constantly being augmented by purchases of books and periodicals necessary for research on contemporary society.

Faculty Roster

Professors emeriti: Leo, Mei; professor Ch'eng; associate professors Nieh-Engle, Ryan, assistant professors Colby, Ho, Supporting Committee for Program in Asian Studies Arkuah (History), Greenough (History), Spivak (Comparative Literature).

Supporting Committee for M.A. in Asian Civilization Studer (Anthropology), Kline (Political Science), Pachow (Religion), Rocer (Art), Gekas (History).
Economics

Department Chairman: Jerold Barnard
Degrees offered: B.A., B.B., B.B.A., M.A., Ph.D.

Economics is concerned with the organization of production and consumption in society, and the associated welfare of the people. It deals with the systematic study of topics such as wealth and poverty, money and bonds, income and consumption, government expenditures and taxation, prosperity and depression, inflation and unemployment, big business and labor unions, and hundreds of other matters that intimately affect the way people live.

Economics seeks to develop an understanding of how complex economic systems work, along with training in the methods of economic analysis that can be applied to a wide range of economic problems. Study of economics is desirable simply from the standpoint of being an informed citizen capable of exercising rational choice at the voting booth. Accordingly, the Department offers a wide range of coursework to meet the needs of the non-major as well as the major.

Undergraduate Programs

The baccalaureate programs in economics provide an excellent background for a variety of positions in business and government. Graduates find employment in banking, financial institutions, industrial firms and trade organizations and in federal, state and local government agencies dealing with economic policy, regulations and analysis. Economics is also considered excellent preparation for law school and for graduate study in such fields as business management, public administration, health and hospital administration, urban and regional planning, transportation, journalism, political science and statistics.

The Department offers three undergraduate degrees—the Bachelor of Science and Bachelor of Arts in the Colleges of Liberal Arts, and the Bachelor of Business Administration in the College of Business Administration.

The B.A. and B.B.A. have the same major requirements, but their college requirements differ. The B.A. program is designed to allow the student maximum flexibility in attaining a well-rounded liberal arts education, while the B.B.A. program is designed to provide a background in the business fields of accounting, finance, marketing, business law and management.

The B.S. program has more quantitative content than the B.A. program, and is designed to prepare the student for graduate work in economics or related business and technical fields.

The B.S. requires one year of foreign language, the B.A. two years.

Program for the B.A. Degree

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

Courses Outside the Department

225:3 Elementary Probability and Statistics 3 s.h.

or

226:7 and 226:8 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:105 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 satisfy the social science core requirement. Credit gained in 6E:106 Price and Employment I 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

224:25 and 224:26 Calculus I, II 225:120 Probability and Statistics

Courses in Economics

20 semester hours of 100-level economics courses, including 6E:102, 6E:104 and 6E:181 Methods of Quantitative Analysis. 6E:1 and 6E:2 satisfy the social science core requirement. Credit earned in 6E:106 Price and Employment Theory cannot be counted toward the 20-hour requirement.

Program for the B.B.A. Degree

The program for the B.B.A. degree is described in the College of Business Administration section of the Catalog.

Honors in Economics

Undergraduate students working toward the B.A. or B.B.A. degree with a major in economics are eligible to participate in the Honors Program in Economics. The Honors Program offers the high-achieving student an opportunity to pursue special research interests. An Honors student must complete four 100-level economics courses including 6E:103 and 6E:105 before his or her senior year, register for 6E:197 Senior Thesis in Economics for three hours of credit in both semesters of his or her senior year, complete a senior thesis under direction of an economics faculty member of professional rank and take (during the final semester of his program) an examination covering his or her departmental Honors work. A student satisfactorily completing the Honors Program receives his or her degree "with Honors."

Coursework for Non-Majors

6E:11, 2 Principles of Economics satisfies the College of Liberal Arts social science core requirement, and provides an introduction to specialized topics of upper division courses. 6E:7 Contemporary Economic Problems and Policy Issues gives students with limited exposure to economics an opportunity to examine the economics behind some current policy issues. Coursework in economics can be related to majors in many other fields—for example, in environmental studies. 6E:193 Economic Growth and Environmental Decay and 6E:103 Multi-economics; or in political science, 6E:119 Economics of the G-1 program Sector and 6E:141 Industrial Organization. A number of students combine related interests by pursuing double majors in economics and, for example, computer science, geography, history, mathematics, political science, sociology or statistics.
Graduate Study
The Department offers graduate programs leading to the Master of Arts and Doctor of Philosophy degrees. The Department enjoys a respected position in current national academic rankings for its excellence of graduate program and faculty. Graduates of the Department have gone on to occupy professional positions in education, government, and industry. They hold academic posts in major universities and colleges all over the nation. Many hold posts in branches of the federal government, e.g., departments of State, Agriculture, Commerce and Treasury, District Federal Reserve Banks and Federal Reserve Board and the U.S. Tariff Commission. Others have made careers in industry and in private research organizations such as RAND, the Brookings Institution and Arthur D. Little. Still others have served in various economic capacities abroad for the State Department, the United Nations and the Ford Foundation. Requirements for the M.A. and Ph.D. degrees are outlined under "Economics" in the College of Business Administration section of the Catalog.

Faculty Roster
Professors Contastino, Kyrat (Murray Professor), Morgan, Nordquist, Pech, Wray, professor emeritus Glass; associate professors Abrecht, Balch, Burdick, Dent, Jeffers, Joseph, Pugne, Ruffin, Sibert, Spoffitt, Swanson, Williamson; assistant professors Wansink.

Courses
All courses offered in the Department are listed in the College of Business Administration section of the Catalog.

Education
See "College of Education."

English
Department Chairman: John C. Gerber
Degrees offered: B.A., B.A. in Letters, M.A., M.A.T., Ph.D.

The Undergraduate Program
The English Major
The broad purpose of the major in English is to provide a program of human learning focused on the study of language and literature and the discipline of writing.

The immediate aims of the study of literature are to help students read the literary work as a variety of ways and to aid them in relating the work to other aspects of its culture. Ultimately, the aim is to liberate students from the narrow outlook of their own time and place.

The chief aim of the study of language is to help students examine historically and analytically the possibilities and limitations of language.

The chief aim of the training in writing is to help students explore and define human experience, especially their own. This training may involve either artistic or functional writing—or both. In either case the immediate goal is written expression that is both precise and forceful.

The English major is valuable training for every type of position calling for orderliness and clear expression and for shrewd assessment of human situations. Students who have majored in English at Iowa now teaching in colleges as well as primary and secondary schools; they are practicing law and medicine, working for advertising firms, newspapers and book publishers and for state and federal governments; many others hold responsible positions in business and industry.

The only absolute requirement for the major in English is 30 hours of work in courses offered by the Department of English, including at least nine semester hours of work in courses dealing principally with literature written before 1800. In practice an English major ordinarily takes about 45 semester hours in English.

With their advisers, students work out programs which seem best to meet their special needs and interests. Normally they begin with courses emphasizing close reading of selected literary works; later they study particular literary genres, the literature and culture of selected historical periods. Often they take courses in such diverse subjects as folklore, literature and film, and printing and design. Concurrently they typically elect work in the history and nature of the English language and advanced training in writing. The latter may be imaginative writing (poetry, fiction, plays), functional writing (exposition, argument, technical reports, writing for social action) and/or the theory of rhetoric and stylistics. To test their study in the Department, English majors are encouraged to take as much work as possible in such fields as history, classical and modern foreign literatures, speech and the fine arts. Students planning to teach in primary or secondary schools will, of course, have to add appropriate courses in education.

Majors in English are exempt from the Literature Core requirement.

As soon as students decide to undertake a major in English, they should consult with the Director of Undergraduate Study in the English Office, 208 EPR. He will assign them permanent advisers. In 308 EPR, too, they may obtain a pamphlet on Designing an English Major, and other booklets explaining departmental programs.

The Literature Seminars
Available at Iowa to all undergraduates, the Literature Seminars are presently: English literature from Chaucer to 1900; American literature from the beginnings, together with British literature since 1900, and English Western literatures read in translation. Each carries 12 hours of credit and involves as much reading as would be contained in four ordinary courses. Classes meet two hours a day, five days a week. Three professors attend all sessions, and the instruction is divided equally among them. Since all assignments are discussed and compared within and across the conventional historical divisions, the students undergo an intensive discipline in practical criticism. They write a paper a week, practice oral reading and productions of scenes from plays, and often write parodies, imitations and other exercises, as ways of increasing their sensitivity to literary styles.

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 or her program with his or her advisor.

Creative Writing
Most of the students come to Iowa because of the excellence of its
Creative Writing Program. With the consent of his or her ad-
viser, any student may elect the undergraduate courses in this
Program. However, admission to the undergraduate workshops
in fiction and poetry (8W15:46 Undergraduate Writers Work-
shop Fiction-Poetry) is only by permission of the instructors.
Manuscripts of representative work must be submitted to the
Writers Workshop no earlier than a week before registration, no
tarter than the day of registration.

English and Education
The Department offers a flexible undergraduate program for stu-
dents planning to teach English in elementary and secondary
schools. Aside from the necessary courses in education, there
are no requirements other than those mentioned above for the
general major in English. However, students planning work
which will help them in their first teaching experiences should
recognize that they will have to be able to work with details
of expression in English. They will probably need advanced train-
ing in writing—fiction, poetry and pedagogy are all impor-
tant—or rhetoric or linguistics or all of these. Their literary
study should emphasize a range of close reading experiences
in different kinds of literature, as well as the methods for explor-
ing a literary text. Especially, they should remember the impor-
tance of a broad educational experience for their own study
and as a basis for understanding the interests of their students.
Finally, they should remember that an undergraduate degree repre-
sentation should prepare them for graduate school, so they should plan
a program which will permit graduate study at a later time.

English majors who are working for teacher certification must
devote one semester of the senior year to professional training
apart from coursework in the English Department.

The Department also participates in a joint major in English
and elementary education. Those interested in such a program
should consult their advisers in elementary education.

Students who seek certification for secondary teaching in
fields other than English may seek minor certification in En-
lish. Such certification is particularly appropriate for students
majoring in speech or journalism. Such a student must complete
20 semester hours of English excluding freshman courses in
rhetoric, speech or writing. The program must include a course
in each of these areas: advanced composition, Shakespeare,
American literature and British literature of the 19th or 20th
centuries. In addition to the 20 semester hours of English, the
student is required to take Methods in Teaching High School
English in the College of Education. While this program meets
minimum requirements for certification, the Department believes
that any student who plans to teach English should have considerable
more training in the field.

Stilian Summer Scholarships
Two $1,000 Stilian Scholarships are available to University of
Iowa English majors for study at either Oxford, London or Ed-
inburgh universities, or the University of Birmingham at Strat-
ford-on-Avon, during the summer following the recipient's junior
year. Applications must be submitted to the English Of-
fice or to the professor in charge not later than February 25 for
the following summer. The application must include the appli-
cant's University of Iowa transcript, letters of recommendation
from two members of the English faculty and a statement of the
applicant's reason for wishing to study abroad and of the con-
tributions the applicant expects such study to make to his or her
senior year of study at Iowa.

Graduate Programs
Minor of Arts
The aims of the Master of Arts program are much the same as
those of the undergraduate programs, except, of course, that the
M.A. program is more demanding. It prepares students to teach
English in high schools and community colleges, or to continue
advanced study as candidates for the doctorate degree.
The program requires at least 30 semester hours of graduate
credit, at least 24 of which must be earned in residence; one de-
partmental seminar with at least a B grade; and satisfactory per-
formance in a four-hour written examination covering a
prescribed reading list.

Students admitted to Ph.D. candidacy may qualify for the
M.A. degree by satisfying the foreign language requirements for
the Ph.D., completing at least 45 semester hours of graduate
coursework with at least a 3.25 grade-point average and per-
forming satisfactorily on a master's examination.

Master of Fine Arts and Specialist In education
This is a two-year, 60-hour program for students, who wish to
prepare for teaching in community colleges. The program in-
cludes five hours in linguistics, 15 in literature, six in advanced
writing and 24 in professional courses taught by specialists in En-
lish and in education. Each student spends one semester teaching
in the community college, such as Dante (Miami), Forest Park
(St. Louis), Kirkwood (Cedar Rapids) or Muscatine.

Master of Fine Arts
The purpose of the Master of Fine Arts program is to provide
professional guidance and a stimulating environment for students
with previous achievement or notable promise in writing poetry,
fiction or plays. The requirements are flexible, but usually in-
clude 48 semester hours of graduate credit, earned chiefly in the
Creative Writing Program, a book-length collection of poems
or short stories, a novel, a play or a work of creative writing in some other appropriate form; and satisfactory perfor-
ance on an examination on modern literature in the form the
student is employing.

Doctor of Philosophy
Since most doctoral graduates enter college and university
education, the Department attempts to prepare Ph.D. candidates
for the teaching, publication and service required of faculty
members. The doctorate requires 72 semester hours of graduate
credit, of which at least 30 must be earned in residence at Iowa.
Within specified limits, the program may be accommodated to
the student's special needs and interests. For example, concentra-
tions are possible in areas of literary history, literary criti-
clien, writing, rhetorical theory and stylistics, folklore, bibliography, pedagogy, comparative literature and linguistics.

The requirements specified by the English Department include formal admission to candidacy by a vote of the full faculty; demonstration of a high level of competence in two foreign lan-
guages and their literatures; distribution coursework depending upon needs in historical areas, criticism and linguistics; three seminars; a paper-written, part-oral comprehensive examination in three areas, two of which are usually historical periods of En-
glish and American literature; a dissertation which may be ei-
ther a scholarly work or a piece of imaginative writing; and a dis-
inal examination in defense of the dissertation. All doctoral candidates are required to gain teaching experience, preferably in the Rhetoric and Literature Core programs of the College of Liberal Arts.

Interested students should write to the Associate Director of Graduate Study in English for more detailed explanations.

Special Features

The University Library is large and comfortable. Strong in all areas of English and American literature, it is especially note-
worthy for its collection of American periodicals and its hold-
ings in 19th- and 20th-century works. Graduate students may also enrich their experience with work in the Center for Textual
Study, in helping with The Iowa Review, the Philological Quar-
terly and the Windover Press; and in procuring the Curt Zi-
mannky Memorial Reading Room. They are welcome to participate in such activities as the English Graduate Student So-
ciety, the Humanities Society and the Friends of Old Time Mu-
sic. Visiting writers and lecturers are on the campus almost every week, and occasional conferences and literary “festivals” cultivate the review of coursework.

Financial Aid

Aid is available to graduate students in the form of scholarships, fellowships and teaching and research assistantships. It is awarded on a competitive basis to the best qualified applicants, without regard to need, race, sex or other non-merit-related crite-
ria. Since sources are limited, normally fewer than half the ap-
plicants for aid receive it. New students are at something of a disad-
antage, and should expect to support themselves through the first year. Applications are considered only from students who have been admitted to the Graduate College. Applications and all necessary supporting material must be submitted by Feb-
ruary 15 for the following fall semester. Forms are available from the Department and the University Office of Admissions.

Admission

All applicants for admission to any graduate program in English must meet the general requirements for admission to the Gradu-
ate College, and must submit at least two letters in support of
their admission. In addition, M.F.A. applicants should submit samples of their poetry or fiction to the director of the Creative Writing Program, and Ph.D. applicants should submit a represen-
tative sample of their writing—a course paper, seminar paper or thesis chapter—to the Department’s associate dean of graduate study.

Faculty Roster

ciate professors M. Bell, Beam, Chamberlain, Clark, Coad-
ige, de St. Victor, Kellogg, Legget, Leggett, Miller, Murray, Nagel, H. Neels-Engle, Szyjak, Steel, Wear, assistant pro-
fessors Androw, L. Bell, Boos, Franklin, Gillett, Kuenbi, Kuhlmann, Kupersmith, Merrett, Morris; assistant professor emeritus Hovey; instructors Becker, Curver, Cheever, Dabie, Eli-
lis, Fox, Irving, Stand; instructors Hooeman, Martin, Wallace, Woodard.

Courses

For Undergraduates

General Interest Courses

Leisure courses for all undergraduates who have satisfied the rhetoric require-
ments:

811 Modern Fiction

3-4 a.h.

812 Modern Poetry

3 a.h.

813 Modern Drama

3 a.h.

Same as Speech and Dramatic Art 341.

815 Literature and Composition I

3-4 a.h.

816 Literature and Composition II

4 a.h.

818 Classical and Medieval Literature

3 a.h.

819 Shakespeare

3-4 a.h.

Same as Speech and Dramatic Art 341A.

Introductory Courses in Critical Reading

Introductory-level discussion courses in which a small number of texts are read carefully to illustrate representative problems in interpreting and evaluating litera-
ture:

816 The Poetry Tradition

3 a.h.

817 The Dramatic Tradition

3 a.h.

Same as Speech and Dramatic Art 341.

818 The Novel Tradition

3 a.h.

819 Selected Works of the August Age

3 a.h.

821 Selected Works of the Renaissance

3 a.h.

822 Selected Works of the 18th Century

3 a.h.

833 Selected Works of the 19th Century

3 a.h.

834 Selected 20th-Century Works Before 1950

3 a.h.

836 Selected British and American Works

3 a.h.

838 Selected Works of the 20th Century

3 a.h.

Major Authors Courses

Limited-enrollment discussion courses. Each author is represented by several ma-
ter works. Contributions of authors are changed regularly. Permission of the instructor, a student may appeal registration for some courses if authors have been changed.

871 Chaucer

3 a.h.

872 Shakespeare

3 a.h.

Same as Speech and Dramatic Art 341.

873 Selected English Authors

3 a.h.

874 Selected American Authors

3 a.h.

875 Selected English and American Authors

3 a.h.

876 Selected Modern Authors

3 a.h.

877 Selected Authors

3 a.h.
Literature Semester Courses

Limited- enrollment term-long discussion courses emphasizing the reading of whole works. They provide an in-depth, close-reading, accelerated introduction to literature. The seminar, to be eligible for honors credit, consists of a minimum of 75 full sessions, with or without an equivalent written component.

8112 - 8113 Advanced Literature 12 a.h.

Honors Courses

Students limited to students in the undergraduate honors program and to others by special permission of the instructor.

8123 Honors Proseminar 3 a.h.

8129 Honors Proseminar 3 a.h.

For Advanced Undergraduates and Graduates

Literature and Culture Courses

These courses are organized around a theme or period which is central to the study of literature. They include work in two or more of the major forms of literature. Students who have established knowledge in history or related arts are especially welcomed. Undergraduate majors in English are urged to include at least one course of this type in the latter half of their majors.

8101 Literature and Culture of the Middle Ages 3-4 a.h.

8102 Literature and Culture of the Renaissance 3-4 a.h.

8103 Literature and Culture of 16th Century England 4-5 a.h.

8104 Literature and Culture of 17th Century England 4-5 a.h.

8105 Literature and Culture of 18th Century America 4-5 a.h.

8106 Literature and Culture of 19th Century America 4-5 a.h.

8107 American Literature and Culture 1800 to Present 3 a.h.

8108 American Literature and Civilization 3 a.h.

8109 American Literature and Civilization 3 a.h.

8110 European Literature of the 19th Century 3-4 a.h.

8111 American Folk Literature 3 a.h.

8112 American Novel 3 a.h.

8113 American Indian Literature 3 a.h.

8114 American Regional Literature 3 a.h.

8115 American Literature of Iowa 3 a.h.

8116 Afro-American Literature 1 3 a.h.

8117 Afro-American Literature 2 3 a.h.

8118 Chicano Literature 3-5 a.h.


8120 African Literature 3 a.h.

8121 American Civilization 4:119 3 a.h.

Literary Genre Courses

Limited to the discussion of a single genre, and usually further narrowed to a specific time and culture. These courses are appropriate for any undergraduate or graduate student interested in the sac.

Poetry

8122 Chaucer 3-5 a.h.

8123 Chaucer 3-5 a.h.

8124 English Language 3 a.h.

8125 Elizabethan Poetry 3 a.h.

8126 Shakespeare 3 a.h.

8127 Shakespeare 3 a.h.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>8.151</td>
<td>Women in Literature</td>
<td>3</td>
</tr>
<tr>
<td>8.154</td>
<td>Historical Backgrounds of Modern English</td>
<td>1</td>
</tr>
<tr>
<td>8.157</td>
<td>Principles of Drama</td>
<td>3</td>
</tr>
<tr>
<td>8.158</td>
<td>Studies in Modern Drama</td>
<td>3</td>
</tr>
<tr>
<td>8.159</td>
<td>Poetry and Related Art Forms</td>
<td>3</td>
</tr>
<tr>
<td>8.171</td>
<td>Drama and Related Art Forms</td>
<td>3</td>
</tr>
<tr>
<td>8.172</td>
<td>Narrative and Related Art Forms</td>
<td>3</td>
</tr>
<tr>
<td>8.173</td>
<td>Literature and the Film</td>
<td>2-3</td>
</tr>
<tr>
<td>8.174</td>
<td>Film Script Analysis</td>
<td>3</td>
</tr>
<tr>
<td>8.175</td>
<td>Literature and Psychology</td>
<td>3</td>
</tr>
<tr>
<td>8.176</td>
<td>Literature and Society</td>
<td>3</td>
</tr>
<tr>
<td>8.180</td>
<td>Elementary Old English</td>
<td>3</td>
</tr>
<tr>
<td>8.181</td>
<td>History of the English Language</td>
<td>3</td>
</tr>
<tr>
<td>8.182</td>
<td>Introduction to Linguistics</td>
<td>3</td>
</tr>
<tr>
<td>8.183</td>
<td>Modern English Grammar</td>
<td>3-4</td>
</tr>
<tr>
<td>8.184</td>
<td>Structure of English</td>
<td>3</td>
</tr>
<tr>
<td>8.185</td>
<td>Historical and Comparative Linguistics</td>
<td>3</td>
</tr>
<tr>
<td>8.186</td>
<td>Introduction to Language Data Processing I</td>
<td>3</td>
</tr>
<tr>
<td>8.187</td>
<td>Introduction to Language Data Processing II</td>
<td>3</td>
</tr>
<tr>
<td>8.188</td>
<td>The Hand-Printed Book: Problems in Design</td>
<td>arr.</td>
</tr>
<tr>
<td>8.190</td>
<td>Medieval Manuscripts and Handwriting</td>
<td>2</td>
</tr>
<tr>
<td>8.198</td>
<td>Honors Project for Undergraduates</td>
<td>arr.</td>
</tr>
<tr>
<td>8.199</td>
<td>Special Project for Undergraduates</td>
<td>arr.</td>
</tr>
<tr>
<td>8.211</td>
<td>Old English: Beowulf</td>
<td>3</td>
</tr>
<tr>
<td>8.212</td>
<td>Old English Literature Excluding Beowulf</td>
<td>3</td>
</tr>
<tr>
<td>8.214</td>
<td>Middle English Language and Literature</td>
<td>3</td>
</tr>
<tr>
<td>8.215</td>
<td>Middle English Poetry and Drama</td>
<td>3</td>
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</table>

**Interdisciplinary Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>8.217</td>
<td>Old Norse</td>
<td>3</td>
</tr>
<tr>
<td>8.218</td>
<td>Old Norse</td>
<td>3</td>
</tr>
<tr>
<td>8.221</td>
<td>17th Century Literature</td>
<td>3</td>
</tr>
<tr>
<td>8.222</td>
<td>Neo classical literature</td>
<td>3</td>
</tr>
<tr>
<td>8.224</td>
<td>Early Victorian Literature</td>
<td>3</td>
</tr>
<tr>
<td>8.225</td>
<td>Late Victorian and Edwardian Literature</td>
<td>3</td>
</tr>
<tr>
<td>8.226</td>
<td>Contemporary British Literature</td>
<td>3</td>
</tr>
<tr>
<td>8.227</td>
<td>Literary History of the United States I</td>
<td>3</td>
</tr>
<tr>
<td>8.228</td>
<td>Literary History of the United States II</td>
<td>3</td>
</tr>
<tr>
<td>8.231</td>
<td>Early American Literature</td>
<td>3</td>
</tr>
<tr>
<td>8.232</td>
<td>American Romantic Literature</td>
<td>3</td>
</tr>
<tr>
<td>8.233</td>
<td>American Realistic Literature</td>
<td>3</td>
</tr>
<tr>
<td>8.234</td>
<td>Early 19th-Century American Literature</td>
<td>3</td>
</tr>
<tr>
<td>8.235</td>
<td>Contemporary American Literature</td>
<td>3</td>
</tr>
<tr>
<td>8.241</td>
<td>19th-20th Century European Literature: St. Augustine to Dante</td>
<td>3</td>
</tr>
<tr>
<td>8.248</td>
<td>Modern Literature and Its Backgrounds</td>
<td>3</td>
</tr>
</tbody>
</table>

**Linguistics and Language Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>8.190</td>
<td>Elementary Old English</td>
<td>3</td>
</tr>
<tr>
<td>8.191</td>
<td>History of the English Language</td>
<td>3</td>
</tr>
<tr>
<td>8.192</td>
<td>Introduction to Linguistics</td>
<td>3</td>
</tr>
<tr>
<td>8.193</td>
<td>Modern English Grammar</td>
<td>3-4</td>
</tr>
<tr>
<td>8.194</td>
<td>Structure of English</td>
<td>3</td>
</tr>
<tr>
<td>8.195</td>
<td>Historical and Comparative Linguistics</td>
<td>3</td>
</tr>
<tr>
<td>8.196</td>
<td>Introduction to Language Data Processing I</td>
<td>3</td>
</tr>
<tr>
<td>8.197</td>
<td>Introduction to Language Data Processing II</td>
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</table>

**Prison and Design Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.197</td>
<td>The Hand-Printed Book: Problems in Design</td>
<td>arr.</td>
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</table>

**For Graduates**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>8.201</td>
<td>Critical and Scholarly Approaches to Literature</td>
<td>6</td>
</tr>
<tr>
<td>8.204</td>
<td>Literature and Language</td>
<td>arr.</td>
</tr>
<tr>
<td>8.211</td>
<td>Old English: Beowulf</td>
<td>3</td>
</tr>
<tr>
<td>8.212</td>
<td>Old English Literature Excluding Beowulf</td>
<td>3</td>
</tr>
<tr>
<td>8.214</td>
<td>Middle English Language and Literature</td>
<td>3</td>
</tr>
<tr>
<td>8.215</td>
<td>Middle English Poetry and Drama</td>
<td>3</td>
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</table>

**Literary Period Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>8.221</td>
<td>17th Century Literature</td>
<td>3</td>
</tr>
<tr>
<td>8.222</td>
<td>Neo classical literature</td>
<td>3</td>
</tr>
<tr>
<td>8.224</td>
<td>Early Victorian Literature</td>
<td>3</td>
</tr>
<tr>
<td>8.225</td>
<td>Late Victorian and Edwardian Literature</td>
<td>3</td>
</tr>
<tr>
<td>8.226</td>
<td>Contemporary British Literature</td>
<td>3</td>
</tr>
<tr>
<td>8.227</td>
<td>Literary History of the United States I</td>
<td>3</td>
</tr>
<tr>
<td>8.228</td>
<td>Literary History of the United States II</td>
<td>3</td>
</tr>
<tr>
<td>8.231</td>
<td>Early American Literature</td>
<td>3</td>
</tr>
<tr>
<td>8.232</td>
<td>American Romantic Literature</td>
<td>3</td>
</tr>
<tr>
<td>8.233</td>
<td>American Realistic Literature</td>
<td>3</td>
</tr>
<tr>
<td>8.234</td>
<td>Early 19th-Century American Literature</td>
<td>3</td>
</tr>
<tr>
<td>8.235</td>
<td>Contemporary American Literature</td>
<td>3</td>
</tr>
<tr>
<td>8.241</td>
<td>19th-20th Century European Literature: St. Augustine to Dante</td>
<td>3</td>
</tr>
<tr>
<td>8.248</td>
<td>Modern Literature and Its Backgrounds</td>
<td>3</td>
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</table>

**Author Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>8.251</td>
<td>Chaucer</td>
<td>3</td>
</tr>
<tr>
<td>8.252</td>
<td>Shakespeare: Early Plays</td>
<td>3-5</td>
</tr>
<tr>
<td>8.253</td>
<td>Shakespeare: Later Plays</td>
<td>3</td>
</tr>
<tr>
<td>8.264</td>
<td>Milton</td>
<td>3</td>
</tr>
<tr>
<td>8.268</td>
<td>Selected Authors</td>
<td>3</td>
</tr>
</tbody>
</table>

**Literary Criticism Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>8.261</td>
<td>History of Criticism: Plato to the Romantics</td>
<td>3</td>
</tr>
<tr>
<td>8.262</td>
<td>History of Criticism: Coleridge to Coote</td>
<td>3</td>
</tr>
<tr>
<td>8.263</td>
<td>Neo classical literature</td>
<td>3</td>
</tr>
<tr>
<td>8.264</td>
<td>Dramatic Theory I</td>
<td>3-5</td>
</tr>
<tr>
<td>8.265</td>
<td>Dramatic Theory II</td>
<td>3-5</td>
</tr>
<tr>
<td>8.266</td>
<td>Classical Rhetoric</td>
<td>2-4</td>
</tr>
<tr>
<td>8.267</td>
<td>Renaissance and modern &quot;Rhetoric&quot;</td>
<td>2-4</td>
</tr>
<tr>
<td>8.268</td>
<td>Renaissance and modern &quot;Rhetoric&quot;</td>
<td>2-4</td>
</tr>
<tr>
<td>8.269</td>
<td>Medieval Rhetoric</td>
<td>3</td>
</tr>
<tr>
<td>8.266</td>
<td>Contemporary Rhetoric</td>
<td>3</td>
</tr>
<tr>
<td>8.270</td>
<td>Medieval and dramatic Art 360-363</td>
<td>3</td>
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**Linguistic Modes Courses**

<table>
<thead>
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<tbody>
<tr>
<td>8.271</td>
<td>The Tragic Mode</td>
<td>3</td>
</tr>
<tr>
<td>8.272</td>
<td>The Comic Mode</td>
<td>3</td>
</tr>
<tr>
<td>8.273</td>
<td>The Tragic Mode</td>
<td>3</td>
</tr>
<tr>
<td>8.274</td>
<td>Poetic Modes</td>
<td>3</td>
</tr>
<tr>
<td>8.277</td>
<td>Dramatic Modes</td>
<td>3</td>
</tr>
<tr>
<td>8.278</td>
<td>Historical modes</td>
<td>3</td>
</tr>
<tr>
<td>8.279</td>
<td>Comparative Literature</td>
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**Special Period Courses**

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>8.301</td>
<td>Medieval Studies</td>
<td>arr.</td>
</tr>
<tr>
<td>8.302</td>
<td>Renaissance Studies</td>
<td>arr.</td>
</tr>
<tr>
<td>8.303</td>
<td>Neo classical Studies</td>
<td>arr.</td>
</tr>
<tr>
<td>8.307</td>
<td>Romantic Studies</td>
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</tbody>
</table>
6:309 Victorian In-Italian
6:311 American Studies
6:313 Modern Studies
6:315 Inter-Period Studies

Comparative and European Literature

6:321 Historical Criticism and the Study of Literary Periods
Same as Comparative Literature 46:321.

6:322 Intellectual Backgrounds of Literary Periods
3 s.h.

6:323 Library Guides and Modes
3 s.h.

6:326 Poetic Theory and Criticism
1 s.h.

6:327 Dramatic Theory and Criticism
3 s.h.

6:328 Theory and Analysis of Literary Forms
3 s.h.

6:329 American Criticism and Culture
Same as American Civilization 43:344.

Comparative and European Literature

6:373 European Renaissance
Same as Comparative Literature 48:373.

6:376 Racine and Molière
Same as Comparative Literature 48:376.

6:376 Age of Enlightenment
Same as Comparative Literature 48:375.

6:378 European Romanticism
Same as Comparative Literature 48:376.

6:377 Recent European Poetry
Same as Comparative Literature 46:377.

6:390 Intellectual Backgrounds of Literary Periods
Same as Comparative Literature 48:390, Spanish 25:312.

6:391 Movements in European Literature
Same as Comparative Literature 48:391.

6:392 Literary Genre and Modes
Same as Comparative Literature 48:392.

6:394 Myths of Myth and Literary Forms
Same as Comparative Literature 48:393.

6:394 Types of Modern Criticism
Same as Comparative Literature 48:394 and Spanish 35:384.

Bibliography

6:399 Literary Tools and Research Methods
3 s.h.

Graduate Seminars

These seminars represent the most advanced work in English. They are limited to graduate students. Permission of the instructor is required for registration.

6:400 Seminar: Middle English Literature
6:410 Seminar: Chaucer
6:412 Seminar: Renaissance Non-Dramatic Literature
6:412 Seminar: Renaissance Dramatic Literature
6:417 Seminar: Shakespeare
6:420 Seminar: Seventeenth-Century Non-Dramatic Literature
6:421 Seminar: Seventeenth-Century Dramatic Literature
6:427 Seminar: British Literary History
Same as Speech and Dramatic Art 367:321.

6:428 Seminar: Milton
6:421 Seminar: Restoration Press
6:421 Seminar: Restorational Poetry
6:421 Seminar: English Renaissance
6:422 Seminar: Victorian Literature
6:423 Seminar: 19th-Century British Literature
6:434 Seminar: 20th-Century British Literature
6:435 Seminar: 20th-Century British and American Literature

6:441 Seminar: American Colonial Literature
6:448 Seminar: American Romantic Literature of the 19th Century
6:448 Seminar: 19th-Century American Literature
6:447 Seminar: American Realistic Literature of the 20th Century
6:450 Seminar: Modern Letters
6:457 Seminar: Social Factors in American Literature
6:448 Seminar: American Writers of the 20th Century
6:460 Seminar: Problems in Aesthetics and Literary Theory
Same as Comparative Literature 48:460.
6:461 Seminar: Studies in the History of Criticism
6:463 Seminar: Studies in Literary Genre
6:463 Seminar: Literary Relations
Same as Comparative Literature 48:463, French 43:355.
6:464 Seminar: Studies of Modern Criticism
6:465 Seminar: Literature and Other Intellectual Influences
6:466 Seminar: American Criticism and Culture
Same as American Civilization 43:466.
6:469 Seminar: Analytical Bibliography and Textual Criticism

Independent Study

Advanced Studies

Courses for one or more students reading under the guidance of a faculty member.

6:500 Advanced Studies in an Author
6:501 Advanced Studies in a Literary Period
6:501 Advanced Studies in a Literary Form
6:501 Advanced Studies in a Literary Genre
6:501 Advanced Studies in a Literary Mode
6:501 Advanced Studies in a Literary Theme
6:501 Advanced Studies in American Criticism
6:540 Advanced Studies in Linguistics
6:545 Advanced Studies in Rhetoric
6:550 Advanced Studies in an Interdisciplinary Subject
6:550 Special Project for Graduate Students

Dissertation

6:550 PhD. Thesis

Professional Courses

Although open to all graduate students, the primary purpose of these courses is to offer directed and practical training to those who plan to teach:

6:306 Medieval English
6:306 Middle English

Same as Education 70:114.

6:313 Teaching Literature
6:313 Teaching in the Two-Year College
6:315 Teaching in the Two-Year College
6:315 Teaching in the University
6:315 Teaching in a Writing Laboratory
6:315 Teaching in a Reading Laboratory
6:315 Teaching in Elementary English
6:315 Teaching in Modern English

Same as Speech and Dramatic Art 367:321.

6:320 English Literature
6:321 English Language
6:321 English Literature
6:321 English Literature
6:321 English Literature

Same as Speech and Dramatic Art 367:320.
European Literature and Thought

European Literature and Thought courses are interdisciplinary and are open to junior, senior and graduate students from any department. Courses are conducted by round-table discussion. Important issues of contemporary topics are explored and evaluated, based on a reading list of outstanding works. Two or more instructors from various departments, such as literature, philosophy, history, fine arts and the sciences, guide the discussions.

Undergraduate Major

A major in European literature and thought offers a basis for a liberal education and equips a student for further work in the special area of his or her choice. The major is set up to provide broader training than is ordinarily obtained under the specific requirements of a single department.

A student may major in this area and earn teacher certification in one or more related departments, or satisfy the requirements for a double major in this program and another.

These specific requirements for the major in European literature and thought are in addition to the general requirements of the College of Liberal Arts:

European literature and thought
History, social sciences
Philosophy, religion, history of science
Literature of England and of the Continent
Fine arts (excluding studio courses)
Foreign language: European, one semester beyond the second year (foreign literature courses in the original language may also be used to satisfy the requirement in literature)

Students considering a major in European literature and thought should consult with the administrative committee before the end of the sophomore year.

Honors

The degree of Bachelor of Arts with Honors may be earned by superior students who undertake a further program of independent study. To be admitted as a candidate for Honors, the student must have the endorsement of the chairman of the program in European literature and thought.

Faculty Roster

The faculty of the Department of English and Comparative Literature includes: 

Courses

31:101 The Pursuit of Happiness
31:102 The Secret Life of Plants
31:103 Myth and Reason
31:104 Human Nature and the Impact of Science

31:105 The Secret Life of Plants
31:106 Values in the Contemporary World

31:107 The Moral Life of Plants
31:108 The Social Life of Plants

31:109 The Political Life of Plants
31:110 The Economic Life of Plants

31:111 Myth and Reason
31:112 The Pursuit of Happiness
31:113 The Secret Life of Plants
31:114 Human Nature and the Impact of Science
French and Italian

Department Chairman: John T. Mathanaga, Jr.
Degree offered: B.A. (French or Italian), B.A. (French), Ph.D. (French)

Undergraduate Programs

The Department offers a variety of major programs in French and Italian, electives for non-majors with prerequisite linguistic skills and flexible means to meet the formal language requirements of the College of Liberal Arts and to satisfy individual needs and interests.

The Department's purpose is to introduce students to the cultures of countries of historical and contemporary importance, facilitate the development of proficiency in the languages and foster critical appreciation of the civilization and literature of the countries.

Majors may combine their studies with courses in education (see "College of Education") to secure jobs in high school teaching. They may continue their studies in graduate school in such areas as French, comparative literature and history, as preparation for college-level teaching. Or, in combination with other skills and majors, majors may find challenging career opportunities in the international areas of government, business, finance, travel or communications, where the knowledge of a foreign language is essential.

French

The undergraduate major in French may be completed with an orientation in either literature or civilization. Requirements for the literature program include:

- 9:27, 28 Second-Year Composition and Conversation 8 s.h.
- 9:111,112 Third-Year Composition 6 s.h.
- 9:136 French Conversation 2 s.h.

Fourth level

A minimum of four 100-level courses in literature plus a fifth 100-level course in a choice of literature, advanced language or civilization 15 s.h.

Requirements for the civilization program include:

- 9:27,28 Second-Year Composition and Conversation 8 s.h.
- 9:109 Introduction to French Civilization 4 s.h.

A minimum of two 100-level courses in French civilization and three 100-level courses in literature 21 s.h.

- 33 s.h.

Italian

Requirements for the major in Italian include:

- 18:111,112 Advanced Composition and Conversation 8 s.h.
- 18:112 Advanced Composition and Conversation 4 s.h.
- 18:105,106 Introduction to Italian Literature (given in Italian) 6 s.h.
- 18:119,20 Dante and His Times 4 s.h.
- 18:101 Literature of the 19th Century 3 s.h.
- or 18:102 Literature of the 20th Century 3 s.h.

Honors

The Department participates in the College of Liberal Arts Honors Program, which provides enrichment opportunities for qualified students.

Summer Program in France

The Department is co-sponsor of a Summer Program in France for students enrolled in the three Iowa Regents' universities. Eligibility for the program requires at least 1 year of college French or the equivalent, but does not require that the student be a French major. Centered in Angers and Paris, the eight-week program combines formal class work in language skills with an integrated course in the culture and civilization of France, with visits to points of cultural and historical interest. Students pay an up to nine semester hours of credit in the program.

Graduate Programs

Master of Arts

Three different programs are offered leading to the Master of Arts degree in French:

Master of Arts with Thesis

This program requires a minimum of 30 semester hours, the passing of a written and oral examination and the preparation and defence of a thesis, in which the student may earn six hours of credit toward the 30-hour requirement. The program must include at least four graduate-level literature courses, 9:137 French Pronunciation and 9:209 Advanced Grammar and Lexicology 9:210 Comparative Stylistics. Candidates may occasionally take courses in related fields.

Master of Arts without Thesis

The requirements for the non-thesis program are the same as for the M.A. with thesis, except that in the non-thesis program the candidate must earn all of the required 30 semester hours in regular coursework.

Master of Arts in French Education

This program is 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 at least nine must be in graduate courses in French literature.

These courses are also suggested: 9:133,154 French-Year Composition, 9:209 Advanced Grammar and Lexicology 9:210

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 study, of which one must be spent in residence at the University, the passing of a comprehensive examination and the oral defense of a dissertation. Specific requirements for the Ph.D. in French include 9:251,252 Historical French Grammar, proficiency in a foreign language other than French and completion of three graduate courses (minimum of eight semester hours) in a second related field (such as another literature, history, philosophy, etc.). The choice of second language and field are to be determined in consultation with the Director of Graduate Studies. Graduate students working toward an advanced degree are required to spend at least one year in teaching as graduate assistants in the Department.

Admission

Candidates for an advanced degree must have completed the equivalent of the undergraduate major in French. Deficiencies in previous training may be removed by taking appropriate courses.

Appointments

Teaching and research assistantships and University fellowships and scholarships are available to qualified graduate students (see "Graduate College"). The Department may name one teaching fellow annually. Inquiries should be addressed to the departmental office.

Exchange assistantship agreements with the French Ministry of Education and the University of Poitiers provide a limited number of graduate students one year of residence in France.

The Faculty

Faculty members in French and Italian enjoy national and international reputations in their fields of specialization, and bring to the classroom a wide variety of teaching and scholarly experience. Each period of French literature is represented by at least one scholar whose research enables him or her to direct dissertations in that area. The Department is particularly strong in contemporary French literature. Biographies of 11 of the graduate faculty are published in the Directory of American Scholars or the Dictionary of International Biography.

Faculty Roster

Professors Aspel, Carnot, Hornsby, Noahagie, O'Connell; professors emeriti Cochran, Cozma, Le-Visky, Ratzemani; associate professors Grene, Huyghe, de Saint-Victor; assistant professors C. Altman, J. Altman, Bourgeois, Mullen, Statich; assistant professor emeritus Knasse.

French Courses

Primarily for Undergraduates

Students who have had any experience with French through study or foreign residence are required to take placement tests.

A student may be placed in second-year French or the equivalent. A student may be placed in third-year French or the equivalent. A student may be placed in fourth-year French or the equivalent. A student may be placed in fifth-year French or the equivalent.

9:1 Elementary French

The course is intended for students who have no prior knowledge of French. It is designed to meet the needs of students who have been prompted to take French by some prior experience, such as a year abroad in a country where French is spoken, or by a French-speaking parent or relative. It is also intended for students who have had no prior experience with French and who wish to begin their study of French at the elementary level. The course is designed to provide a solid foundation in the basics of spoken and written communication in French, with an emphasis on communicative competence and a solid foundation in the basics of spoken and written communication in French, with an emphasis on communicative competence.

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Italian Courses

**Primarily for Undergraduates**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>18:1</td>
<td>Elementary Italian</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>18:2</td>
<td>Elementary Italian</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>18:11</td>
<td>Intermediate Italian</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>18:12</td>
<td>Intermediate Italian</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>18:13</td>
<td>Conversational Italian</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>18:53</td>
<td>Special Work</td>
<td>1 s.h.</td>
</tr>
<tr>
<td>18:111</td>
<td>Advanced Composition and Conversation</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>18:112</td>
<td>Advanced Composition and Conversation</td>
<td>4 s.h.</td>
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**For Undergraduates and Graduates**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>18:1/1</td>
<td>Literature of the 16th Century</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>18:1/2</td>
<td>Literature of the 20th Century</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>18:1/3</td>
<td>Given in English.</td>
<td></td>
</tr>
<tr>
<td>18:1/3</td>
<td>Intensive Italian: Grammar</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>18:1/4</td>
<td>Given in undergraduates with a minimum of two years in another foreign language and in graduate study.</td>
<td></td>
</tr>
<tr>
<td>18:1/5</td>
<td>Introductory Italian: Readings</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>18:1/6</td>
<td>Introduction to Italian Literature</td>
<td>3-5 s.h.</td>
</tr>
<tr>
<td>18:1/6</td>
<td>From latest writings in end of 16th century; given in English. Prerequisite: 18:1/2.</td>
<td></td>
</tr>
<tr>
<td>18:1/6</td>
<td>Introduction to Italian Literature</td>
<td>2-3 s.h.</td>
</tr>
<tr>
<td>18:1/6</td>
<td>Continuation of 18:1/6, but may be taken as an independent unit; from 17th century to present.</td>
<td></td>
</tr>
<tr>
<td>18:11/9</td>
<td>Dante and His Times</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>18:11/9</td>
<td>Given in English.</td>
<td></td>
</tr>
<tr>
<td>18:11/9</td>
<td>Dante and His Times</td>
<td>2 s.h.</td>
</tr>
</tbody>
</table>

**Primarily for Graduates**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>18:2/7</td>
<td>Alberto Moravia and the 20th-Century Novel</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>18:2/8</td>
<td>Representative Writers of Modern Italy: Silvano, Vittorini, Pavesi</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>18:2/9</td>
<td>Italian Dramatic Literature of the 20th Century</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>18:2/16</td>
<td>Petrocchi and Early Italian Lyric</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>18:2/17</td>
<td>Given in English.</td>
<td></td>
</tr>
<tr>
<td>18:2/17</td>
<td>Literature of the 15th Century</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>18:2/18</td>
<td>Given in Italian.</td>
<td></td>
</tr>
<tr>
<td>18:2/18</td>
<td>Dramatic Theory and Practice of the Renaissance</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>18:2/19</td>
<td>Given in English.</td>
<td></td>
</tr>
<tr>
<td>18:2/19</td>
<td>Dante's Divine Comedy I</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>18:2/20</td>
<td>Given in Italian.</td>
<td></td>
</tr>
<tr>
<td>18:2/20</td>
<td>Dante's Divine Comedy II</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>18:2/29</td>
<td>Given in Italian.</td>
<td></td>
</tr>
<tr>
<td>18:2/29</td>
<td>Special Work</td>
<td>1 s.h.</td>
</tr>
</tbody>
</table>

**General Science**

Program Head: Robert S. Yager
Degree offered: B.A., B.E.

The general science major is designed primarily for students interested in a professional area requiring a background in more than one science discipline. There are specific programs for each professional area, as outlined below. Each of these programs meets 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 meeting the minimal requirements listed below.

Minimum requirements for the general science degree involve selection of courses in three of these science departments: Chemistry, Geology, Physics and Astronomy, Botany, Zoology, Mathematics, Biochemistry and Microbiology.

Two options are available for the B.A.: completion of 20 semester hours in one of the science departments listed above and eight semester hours in each of two other departments in the same list, or completion of 16 semester hours in one department, 12 semester hours in a second department and eight in a third.

The B.S. program requires four semester hours of science credit beyond the basic 36-semester-hour pattern described above. 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 one of the eight-semester-hour requirements indicated above. At least 10 semester hours of credit in science must be completed in residence.

The B.A. requires completion of at least four semesters of college-level study totaling not less than 12 semester hours in German, French or Russian. The B.S. requires four semester hours of one of these languages. The student's advisor can approve the selection of another language if there are circumstances making such a choice desirable.

The following are the science course requirements in the various general science baccalaureate programs the University offers.

**Engineering-General Science Combination**

Coordinator: Donald H. Maisonneuve

Purpose: To meet College of Liberal Arts requirements for the B.A. degree in general science and B.S. requirements in College of Engineering.

**Mathematics**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>22M:35</td>
<td>Engineering Mathematics I</td>
<td>5 s.h.</td>
</tr>
<tr>
<td>22M:36</td>
<td>Engineering Mathematics II</td>
<td>5 s.h.</td>
</tr>
<tr>
<td>22M:37</td>
<td>Engineering Mathematics III</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>22M:38</td>
<td>Engineering Mathematics IV</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>22B:29</td>
<td>Probability and Statistics for Engineering and Physics Sciences</td>
<td>3 s.h.</td>
</tr>
<tr>
<td></td>
<td>Elective</td>
<td>1 s.h.</td>
</tr>
</tbody>
</table>

**Physics**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>29:82, 83</td>
<td>Physics I, II</td>
<td>6 s.h.</td>
</tr>
<tr>
<td></td>
<td>Elective</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>4:1, 4</td>
<td>Principles of Chemistry I, II</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>4:6</td>
<td>Elementary Chemistry Laboratory</td>
<td>2 s.h.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>36 s.h.</td>
</tr>
</tbody>
</table>

**Medical Technology**

Medical Director: M. L. O'Connor
Coordinator: C.S. Glueck

Required:

4:1, 4, 6 Principles of Chemistry I, II, Elementary Chemistry Laboratory | 2 s.h. |
Nuclear Medical Technology

Director and Advisor: Richard E. Peterson

Coordinator: Glen L. Sneed

Purpose: Preparation for certification as a nuclear medical technologist, while completing requirements for a bachelor's degree in general science.

Required:

4:1, 4 Principles of Chemistry I, II 6 s.h.
4:11 Elementary Quantitative Analysis 4 s.h.
4:121, 122, 141 Organic Chemistry I, II, Intermediates Chemistry Laboratory I 8 s.h.
37:3 Principles of Animal Biology 5 s.h.
37:118 Parasitology 4 s.h.
46:157 General Microbiology 4 s.h.
22M:2, 3 Mathematical Techniques I, II 3 s.h.

Recommended:

63:161 Statistical Methods in the Biomedical Sciences 3 s.h.
72:13 Introduction to Human Physiology 4 s.h.
37:81 Principles of Human Genetics 3 s.h.

Recommended:

29:3 Basic Physics 4 s.h.

Total required courses 40 s.h.

Pre-Dentistry

Coordination: Daniel L. Hall

Purpose: Preparation for application and possible admission to the College of Dentistry.

Required:

4:1, 4 Principles of Chemistry I, II 6 s.h.
4:11 Elementary Quantitative Analysis 4 s.h.
4:121, 122 Organic Chemistry I, II 6 s.h.
37:3 Principles of Animal Biology 5 s.h.
37:49 Introduction to Animal Behavior 3 s.h.
37:112 Cell, Tissue and Organ Biology 4 s.h.
29:1, 2 College Physics 8 s.h.

Recommended:

23M:7 Quantitative Methods I 4 s.h.
63:161 Statistical Methods in the Biomedical Sciences 3 s.h.
60:1 Elementary Human Anatomy 4 s.h.
72:13 Introduction to Human Physiology 4 s.h.
63:101 Health Science I 2.5 or 5 s.h.
99:161 Biochemistry For Dental Students 4 s.h.

Physical Therapy

Director: G. L. Smith

Purpose: To provide background for admission to physical therapy program while meeting requirements for the bachelor’s degree in general science.

Required:

4:1, 4 Principles of Chemistry I, II 6 s.h.
4:9 Elementary Chemistry Laboratory 2 s.h.
37:3 Principles of Animal Biology 5 s.h.
37:104 Laboratory in Modern Embryology 3 s.h.
29:3 Basic Physics 4 s.h.
29:25 Chemistry and Physics of the Environment 4 s.h.

Elective courses in the above departments are required to complete the 16-, 12-, 8-h. pattern.

Elective courses in the above departments are required to complete the 16-, 12-, 8-h. pattern.

Also required:

4:7, 8 General Chemistry I, II 6 s.h.
4:9 General Chemistry Laboratory 2-3 s.h.
4:52 Chemistry to Our Lives 3 s.h.
4:11 Elementary Quantitative Analysis 4 s.h.
4:121, 122 Organic Chemistry I, II 6 s.h.
37:102 Principles of Modern Embryology 4 s.h.
37:128 Fundamental Genetics 3 s.h.
37:103 Comparative Vertebrate Anatomy 4 s.h.
37:112 Cell, Tissue and Organ Biology 4 s.h.
37:118 Parasitology 4 s.h.
60:109 Human Anatomy 4 s.h.
72:151 Intermediate Physiology 5 s.h.
37:101 Principles of Human Genetics 3 s.h.
29:1, 2 College Physics 8 s.h.
29:62 General Astronomy 4 s.h.

Pre-Medicine

Coordinator: Donald J. Pietsky

Purpose: Preparation for application and possible admission to the College of Medicine.

Required:

4:1, 4 Principles of Chemistry I, II 6 s.h.
4:6 Elementary Chemistry Laboratory 2 s.h.
4:121, 122 Organic Chemistry I, II 6 s.h.
4:141 Intermediate Chemistry Laboratory I 2 s.h.
29:1, 2 College Physics 8 s.h.
22M:2, 3 Mathematical Techniques I, II 3 s.h.

More advanced courses may be substituted.

37:3 Principles of Animal Biology 5 s.h.
Electives in Zoology 7 s.h.
Any two of the following will satisfy both general science de-
grees and College of Medicine admission requirements:

37:102 Principles of Modern Embryology 4 s.h.
37:103 Comparative Vertebrate Anatomy 4 s.h.
37:105 Cell Physiology 4 s.h.
37:107 Invertebrate Zoology 4 s.h.
37:109 Genetics 4 s.h.
37:128 Fundamental Genetics 3 s.h.

Electives which are not applicable to graduation requirements in
general science but which are recommended for College of
Medicine admission application purposes:

99:120 The Chemistry of Biological Materials 3 s.h.
99:130 Metabolism 3 s.h.
2:102 Genetics 3-4 s.h.
2:109 Plant Physiology 4 s.h.
2:110 Plant Physiology 4 s.h.
2:114 Ultrastructural Plant Cytology 4 s.h.
2:128 Fundamental Genetics 3 s.h.
61:157 General Microbiology 4 s.h.
61:158 Microbiology 5 s.h.
12:121 Principles of Paleontology 1 s.h.

Pre-Veterinary Science

Coordinator: Sherwood D. Tuttle
Purpose: Preparation for admission to a college of veterinary
medicine. Requirements differ. The following include courses
the Iowa State University College of Veterinary Medicine re-
mains:

4:1 Principles of Chemistry I 6 s.h.
4:4 Principles of Chemistry II 6 s.h.
4:6 Elementary Chemistry Laboratory 2 s.h.
4:11 Elementary Quantitative Analysis 4 s.h.
4:121 Organic Chemistry I 3 s.h.
20:1 College Physics 4 s.h.
20:2 College Physics 4 s.h.
37:3 Principles of Animal Biology 5 s.h.
37:128 Fundamental Genetics 3 s.h.
Electives 3 s.h.

Science Teaching

Coordinator: Robert B. Yager
Purpose: Preparation for certification as a secondary teacher of
science while meeting liberal arts requirements for the bache-
lor’s degree in general science.

Biology Emphasis

Advisor: William L. Sharp

2:1 Introduction to Botany 4 s.h.
37:3 Principles of Animal Biology 5 s.h.
Electives to total 16 s.h. in botany or
zoology and at least 8 s.h. in the oth-
ors:
4:1, 4 Principles of Chemistry I, II 6 s.h.
4:121, 122 Organic Chemistry I, II 6 s.h.
12:3 Principles of Physical Geology 2 s.h.
12:4 Principles of Historical Geology 2 s.h.
97:128 Meaning of Science 2 s.h.
97:130 History of Science 2 s.h.

Chemistry Emphasis

Advisors: Norman C. Baehr, Vincent N. Luette
4:1, 4 Principles of Chemistry I, II 6 s.h.
4:6 Elementary Chemistry Laboratory 2 s.h.
4:8, 9 General Chemistry II 2 s.h.
4:121, 122, 141 Organic Chemistry I, II 8 s.h.
4:11 Elementary Quantitative Analysis 4 s.h.
4:131, 132 Physical Chemistry I, II 6 s.h.
20:1 College Physics 4 s.h.
20:17 Introductory Physics I 4 s.h.
20:2 College Physics 4 s.h.
20:18 Introductory Physics II 4 s.h.
20:19 Introductory Physics III 4 s.h.
29:61 General Astronomy 4 s.h.
22:35, 36 Engineering Mathematics I, II 10 s.h.
22M:26, 26 Calculus I, II 3 s.h.
97:128 Meaning of Science 2 s.h.
97:130 History of Science 2 s.h.

Earth Science Emphasis

Advisors: Verne Sweet, Edward L. Platini
12:3 Principles of Physical Geology 2 s.h.
12:5 Introduction to Geology 4 s.h.
11:23 Earth History and Resources 2 s.h.
12:4 Principles of Historical Geology 2 s.h.
11:24 Man and His Physical Environment 4 s.h.
12:9 Geology of Iowa 2 s.h.
12:41 Mineralogy 3 s.h.
12:12 Principles of Paleontology 3 s.h.
12:15 Principles of Stratigraphy 3 s.h.
12:17 Geomorphology 3 s.h.
4:1, 4 Principles of Chemistry I, II 6 s.h.
4:6 Elementary Chemistry Laboratory 2 s.h.
20:1, 2 College Physics 8 s.h.
20:61, 62 Elementary Quantitative Analysis 8 s.h.
44:121 College Physics 3 s.h.
44:101 Introduction to Weather and Climate 3 s.h.
97:128 Meaning of Science 2 s.h.
97:130 History of Science 2 s.h.

Environmental Studies Emphasis

Advisors: William L. Sharp, Frederick W. Duke
2:1 Introduction to Botany 4 s.h.
37:3 Principles of Animal Biology 2 s.h.
2:12 Algae and Fungi 4 s.h.
37:109 Genetics 4 s.h.
37:131 Evolution 4 s.h.
<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tr>
<td>37:132</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>97:140</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>97:119</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>97:128</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>97:130</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>2:111</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>97:183</td>
<td>2-5 s.h.</td>
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<tr>
<td>52:125</td>
<td>2 s.h.</td>
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<tr>
<td>52:152</td>
<td>2 s.h.</td>
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<tr>
<td>52:155</td>
<td>3 s.h.</td>
</tr>
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<td>52:168</td>
<td>3 s.h.</td>
</tr>
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<td>60:2</td>
<td>4 s.h.</td>
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<td>11:25</td>
<td>4 s.h.</td>
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<td>49:183</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>49:184</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>52:127</td>
<td>4 s.h.</td>
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**Physics Emphasis**

Advisors: George W. Cosman, Edward B. Nelson, Vincent N. Lometta

- 29:1 College Physics 4 s.h.
- 29:17 Introductory Physics I 4 s.h.
- 29:2 College Physics 4 s.h.
- 29:25 Introductory Physics II 4 s.h.
- 29:19 Introductory Physics III 4 s.h.
- 52:64 General Astronomy 4 s.h.
- 29:128 Electronics 4 s.h.
- 22M:35 Engineering Mathematics I 5 s.h.
- 22M:36 Engineering Mathematics II 5 s.h.
- 24C:7 Introduction to Computing with Fortran 3 s.h.

**Minors in Science Teaching**

Coordinator: Robert E. Yager

Five teaching minors in science are available for persons with teaching majors in other academic areas. Only these combinations of courses qualify a person for certification in the area specified:

**Biology—22 s.h.**
- 2:1 Introduction to Botany 4 s.h.

**Chemistry—22 s.h.**
- 4:1 Principles of Chemistry I, II 6 s.h.
- 4:6 Elementary Chemistry Laboratory 2 s.h.
- 4:11 Introductory Quantitative Analysis 4 s.h.
- 4:121 Organic Chemistry I 3 s.h.
- 4:131 General Chemistry II 3 s.h.
- 97:128 Meaning of Science 2 s.h.
- 97:130 History of Science 2 s.h.

**Physics—24 s.h.**
- 4:1 Principles of Chemistry I, II 6 s.h.
- 4:6 Elementary Chemistry Laboratory 2 s.h.
- 29:1, 2 College Physics 8 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 4 s.h.
- 37:3 Principles of Animal Biology 5 s.h.
- 29:61 General Astronomy 4 s.h.
- 12:3 Principles of Physical Geology 2 s.h.
- 12:4 Principles of Historical Geology 2 s.h.
- 4:1 Principles of Chemistry I 4 s.h.
- 29:1 College Physics 4 s.h.
- 97:128 Meaning of Science 2 s.h.
- 97:130 History of Science 2 s.h.

**Earth Science—18 s.h.**
- 12:3 Principles of Physical Geology 2 s.h.
- 12:4 Principles of Historical Geology 5 s.h.
- 12:5 Physical Geology Laboratory 1 s.h.
- 29:61 General Astronomy 4 s.h.
- 29:62 General Astronomy 4 s.h.
- 97:128 Meaning of Science 2 s.h.
- 97:130 History of Science 2 s.h.

**Faculty Roster**

Professor Yager; associate professor Cosman, Phillips; assistant professors Lometta, Pizaro, Sharp, Sheldon, Shymansky, Wilson; assistant professor Downes.

**Genetics**

Committee Chairman: Dawson Mohler

Genetics is an interdisciplinary program of the departments of Biochemistry, Botany, Microbiology, and Zoology. The M.S.

**Principles of Animal Biology**
- 5 s.h.

**Meaning of Science**
- 2 s.h.

**History of Science**
- 2 s.h.

**Electives in Botany and Zoology**
- 8 s.h.
and Ph.D. degrees are offered in one of the participating departments; degrees are not now offered in genetics. However, a proposal to grant the Ph.D. degree in genetics was under consideration at the time of Catalog publication; questions about the status of the proposal should be addressed to the chairman of the Interdisciplinary Committee for Genetics.

Undergraduate students who want to prepare for graduate study in genetics should complete an undergraduate degree with a major or emphasis in science. Most of the present students in genetics 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 involves a number of other scientists whose research includes genetics.

Faculty Roster

Professor Coway (Biochemistry), Praskev (Zoology), Milken (Zoology), Miehe (Zoology), Six (Microbiology), Wickeur (Psychology), Zellinger (Pediatrics), associate professor Carl- son (Botany), Hageno (Zoology), Levescu (Pediatrics), Menninger (Zoology), Sartzy (Botany), Tsuang (Psychiatry); assistant professors Donelson (Biochemistry), Fein (Microbiology), Gatto (Zoology), Niewo (Zoology), Sill (Zoology), Schoen (Internal Medicine), Walker (Microbiology).

Courses

Biochemistry

48:131 Molecular Genetics 3 a.h.
48:377 Topics in Biochemistry 3 a.h.

Botany

2:105 Genetics 3-4 a.h.
Same as Zoology 2:105.
3:128 Fundamental Genetics 3 a.h.
Same as Zoology 3:128.
2:120 Fundamental Genetics Laboratory 1 a.h.
2:104 Cytogenetics 3 a.h.
2:105 Genetics of Cell Organelles 3 a.h.
2:181 Microbiological Cell Biology 3 a.h.

Microbiology

48:178 Microbial Genetics 3-4 a.h.
48:370 Topics in Molecular Biology 3 a.h.

Zoology

37:109 Genetics 3 a.h.
Same as Zoology 3:109.
37:128 Fundamental Genetics 3 a.h.
Same as Zoology 2:128.
3:128 Fundamental Genetics Laboratory 1 a.h.
37:129 Embryology 4 a.h.
Same as Zoology 3:129.
37:160 Advanced Genetics 4 a.h.
37:160 Population Genetics 2 a.h.
37:162 Behavioral Genetics 2 a.h.
37:165 Quantitative Genetics 2 a.h.

Geography

Department Chairman: Charles F. Kohn
Degrees offered: B.A., B.S., M.A., Ph.D.

Vanished is the legendary encyclopedia-gographer crammed with isolated bits of information ranging from the capital city of Mauritania to the annual Yukon Valley potato production of the height of the highest mountain in Outer Mongolia. Modern geography is concerned more with the spatial aspects of human behavior than with the memorization of rainfall data, crop production or the length of rivers. Students who study geography soon find that geographic insights and methods of inquiry are related to the solution of many of the complex problems confronting modern societies, such as air and water pollution, traffic problems, the development of ghettos in large cities, distribution and availability of natural resources rapidly increasing populations and conflicts between nations. Increasing numbers of undergraduates are discovering that a major in geography provides them with concepts and methods for organizing cities, market regions, school districts or other human institutions.

Much of modern geography is problems-oriented. It is scientific as well as humanitarian in its approach to the solution of these problems. It is involved with two basic considerations: the best means to obtain accurate facts or data; and the tools and techniques necessary for analyzing these data to see if they verify or alter existing explanations for the facts as they are observed. Modern technology has come to the aid of the professor in achieving both of these goals. Satellite instrumentation, such as radar, infrared and visible light cameras, is being used to gather information for understanding and solving a wide range of human problems. The computer has proved to be a priceless aid in analyzing these data, which are contributing to the planning of urban areas, the development of better policies and practices for the use of resources, the solving of pollution and other environment problems, the easing of internal and international conflicts, and many other endeavors.

Today's geography is man-centered and contributes to the decision-making processes involved in determining how man can improve the quality of life in this complex age.

Career opportunities for undergraduate majors in geography lie in a wide variety of governmental and business circles. There is a demand for persons capable of dealing with resource management, economic development, market area analysis and other problems related to the distribution and spatial interaction of physical, economic, social and political phenomena in the worst of which are the major problems we face today.

There is also a growing demand for young people concerned with man's perception of and subsequent interactions with the
total environment. Courses in geography are commonly required of students preparing to enter the teaching profession at the elementary and secondary school levels, of students who want to work in urban and regional planning, and as a background for many related professions, including law, hospital administration, and transportation engineering.

The Undergraduate Program
The Geography faculty has developed an undergraduate program which contributes to the liberal education of all undergraduate students; it provides innovative and relevant preparation of under-graduate majors for careers in which an understanding of geography is basic, and it joins in significant interdisciplinary programs involving regional, urban and environmental components.

Several geographic themes and principles comprise the intellectual framework of the discipline and serve as unifying threads through all courses constituting the Department's program. The emphasis is on the spatial aspects of human behavior, environment-society 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 desiring 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, and how to find relevant data for analyzing these problems, how to relate their findings to existing theories and how to apply their findings to real-world situations.

Geography courses open to undergraduate students may be taken in any order or simultaneously; no undergraduate course in geography has any prerequisites. Most courses below the 100 level are open to freshmen.

Students majoring in geography must meet the general College of Liberal Arts skills and core requirements. Credit earned in 44:1 Introduction to Human Geography, 44:2 Natural Environment and Man, 44:11 Introduction to Social Geography, 44:19 Natural Environmental Issues, 44:30 Introduction to Economic Geography, 44:35 Introduction to Urban Geography, 44:15 Political Geography of Cities, 44:15 Political Geography, 44:13 Location of Services, 44:13 Industrial Location, 44:13 Urban Geography, 44:13 The Inner City, 44:13 Metropolitan Growth and Development, 44:161 African Development and 44:196 Energy in Contemporary Society. Other clusters may be designed by the student with the help of his or her advisor.

The Graduate Program
The goals of the Department at the graduate level are to prepare students to carry on creative and productive research in geography involving the use of theory, modeling and non-verifica- tion methods; to prepare students for positions in research, teaching or some other type of applied geography; and to help students develop their ability to apply knowledge of facts, theories and methodology to specific societal problems. The achieve- ment of these goals is expected of all graduate students. Students must offer a cluster of ten courses appropriate for a master's degree, as elected by the Department. Students must also complete a master's thesis (44:206 Teaching College Geography or 44:208 Research Seminar: The Teaching of Geography) for their selected area of specialization. Opportunities are provided for all graduate students to gain practical teaching experience through service as departmental teaching assistants or through other supervised teaching duties. Graduate students who plan to become college teachers are encouraged to complete 44:206 Teaching College Geography.

Master of Arts
The Department offers two programs leading to the Master of Arts degree, and without thesis. All students whose objec- tive is the Master of Arts degree are required to complete a minimum of 30 semester hours of graduate work including 44:201 Geographical Analysis and 44:208 Quantitative Analysis I. The remainder of both programs must be composed of graduate-level courses or research seminars as approved by the facult-
ty or the student’s advisor. 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 Master of Arts degree with thesis. All students must pass a final examination.

Doctor of Philosophy

Students whose degree objective is the Doctor of Philosophy are required to complete 44:201 Geographical Analysis and 44:208, 209 Quantitative Analysis I, II, preferably during their first year in residence. However, the student must meet these requirements within three years of admission to the program. The examination in the first year is administered during the second week of the fall semester. In the second year, the written examination is administered during the second half of the fall semester. The examination in the third year is administered during the second week of the fall semester.

All doctoral students are required to complete two research seminars, preferably during their second year in residence, under the direction of different faculty members. These seminars are required, unless excused by the faculty, in the fall semester and the second week of the fall semester. The seminars focus on the research of the student and the development of a research proposal.

Programs of study are arranged by an examination committee consisting of three faculty members, including the student’s advisor and at least one other member of the Department of Geography.

Innovations in Teaching

In recent years, 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 and problem-solving skills. In some instances, lectures are no longer the focus of a course. Rather, lectures and reading assignments are built around the activities to be performed in discussion-laboratory periods. Teaching tools in which computers are used to manipulate the parameters of spatial models have been introduced in several of the undergraduate and graduate courses.

Research Productivity

Since its origin, the Department has made significant contributions to the advancement of research in geography. It was among the first in the country to study regional scientific methods in 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. Its faculty is currently involved in research problems such as the political-territorial organization of cities, the development of geographically structured urban systems, the optimization of urban and transportation systems, economic development and national building in Africa, spatial organization of political systems, the interrelations of the natural environment and man, the development and distribution of fluvial and glacial landforms and mass movement, the natural resources and their utilization, patterns and processes of economic development and national building in Africa, spatial organization of political systems, the interrelations of the natural environment and man, the development and distribution of fluvial and glacial landforms and mass movement, the natural resource base and urban spatial analysis.

Rating of Department

In its recent evaluation of graduate departments, the American Council on Education ranked the Iowa Department of Geography as “strong.” The Department was also included in the ACH’s list of 15 “leading” departments in geography in the nation.

Graduate Admission

In determining the admission of a student to the graduate pro-
gam, 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; scores on the Graduate Record Examination Aptitude Test; letters of recommendation from those with whom he or she has taken courses; and an essay in which the applicant sets forth the reasons for wanting to continue his or her study of geography at the University of Iowa. An applicant with an under-
graduate grade-point average between 2.5 and 2.75 will be admitted for the M.A. degree on condition only and must achieve a grade-point average of 2.75 or better on the first 12 hours of graduate work, as approved by the Department, in or-
er order to remain as a graduate student. 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.
The Faculty

Individual faculty members participate in University, local, state, national and international groups whenever significant use can be made of their special professional competencies. They give time and energy to professional organizations and have served as executive officers, members of governing boards and 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 other colleagues in both 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 colleges of Engineering, Medicine and Law.

The Map Library

Housed on the third floor of the Main Library, the Map Library contains more than 60,000 maps, a total of 1,890 million and reference works, and about 60,000 serial photographic, primarily of Iowa. The map collection in the Library is a depository library for maps of the U.S. Army Topographic Command, formerly Army Map Service. The Geology Library contains approximately 50,000 maps, including both geologic maps and U.S. Geological Survey topographic maps. The Department of Geography has its own collection of topographic maps, maps of large urban centers and serial photograph for use by students in working out laboratory exercises.

In recent years, the Department has been fortunate in receiving grants for supporting research and service activities. Many of these grants include funds for supporting research and other assistants.

Faculty Roster

Professor Dugger, Horren, Kohls; associate professors Lindberg, McNair, Reynolds, Stuhan, Salisbury; assistant professors Gumpert, Honey.

Courses

4411 Introduction to Human Geography 4 a.h. Application of geographic principles to contemporary social, economic and political problems; urban growth; problems of the ghetto; diffusion of innovation; international and interregional problems.
4412 Natural Environment and Man 4 a.h. Special emphasis on the earth's natural resources including climate, water, landforms, soils, vegetation and human activities in a setting within regional provinces in terms of relationship to the natural and environmental pollution and natural hazards.
4413 Introduction to Social Geography 4 a.h. Special emphasis on population growth and distribution and activities within a population; poverty; hunger, social organization and changes; social systems including education, religion, recreation, spatial and social services; diffuse of ideas and concepts; diffusion of innovations from one region to another.
4419 Natural Environmental Issues 2 a.h. Analysis of these factors in the context of environment, and the relation of human activities to the environment. Problems resulting from expanding population, energy, water and land pollution, population pressure on agricultural resources, energy and natural resources, environment and quality of life.
4420 Introduction to Environmental Geography 2 a.h. Location and spatial organization of the world's major types of economic, agricultural, energy and natural resources, transportation, trade and survival.
4425 Introduction to Urban and Land Use 2 a.h. Principles of urbanization and city growth; spatial structure and pattern of urban activities; geographic considerations of contemporary urban problems, the city and its physical setting, comparative urban studies.
4426 Budgeting for Undergraduates 2 a.h. Supervised work in geography; preparation of instructor required before registration.

Courses for Undergraduates and Graduates

4410 Introduction to Geographical Methods 2 a.h. Special emphasis on the use of computer and other technological approaches in the study of land use and urban geography.
4415 Urban Geography of Cities 2 a.h. Specific geographic analysis of urban areas and of the problems and impact of urban land-use and traffic considerations in metropolitan areas.
4416 Urban Geography of Cities 2 a.h. Urban Geography.
4417 Social Science applications to relationships between the physical environment of individuals, groups and systems, and the structure of urban, rural, political and consumer environments; theory of political and urban growth; development of an urban environment based on an assessment of political and economic growth.
4418 Natural Environmental Issues 2 a.h. Analysis of land use, landuse and natural resources. Problems resulting from expanding population, energy, water and land pollution, population pressure on agricultural resources, energy and natural resources, environment and quality of life.
4420 Graduate Seminar in the Social Sciences 2 a.h. Special emphasis on the use of computer and other technological approaches in the study of land use and urban geography.
4425 Introduction to Environmental Geography 2 a.h. Location and spatial organization of the world's major types of economic, agricultural, energy and natural resources, transportation, trade and survival.
4426 Budgeting for Undergraduates 2 a.h. Supervised work in geography; preparation of instructor required before registration.

Terms

4411 Introduction to Human Geography 4 a.h. Application of geographic principles to contemporary social, economic and political problems; urban growth; problems of the ghetto; diffusion of innovation; international and interregional problems.
4412 Natural Environment and Man 4 a.h. Special emphasis on the earth's natural resources including climate, water, landforms, soils, vegetation and human activities in a setting within regional provinces in terms of relationship to the natural and environmental pollution and natural hazards.
4413 Introduction to Social Geography 4 a.h. Special emphasis on population growth and distribution and activities within a population; poverty; hunger, social organization and changes; social systems including education, religion, recreation, spatial and social services; diffuse of ideas and concepts; diffusion of innovations from one region to another.
Geology

Department Chairman: Richard A. Hopkins

Degree offered: B.A., B.S., M.S., Ph.D.

Geology is the theoretical and practical application of all scientific disciplines to the study of the earth. How the earth was formed, what it looks like now and how man is changing it for future generations—all are geological concerns.

Career opportunities are available to professional geologists in industry, teaching, urban planning, geological and resource surveys, government, and research organizations. The master's degree is regarded by most hiring agencies as the working degree in geology. However, an undergraduate degree is fully satisfactory in certain teaching, federal and industrial situations.

Many of Iowa's geology graduates find employment in the petroleum industry or exploration geologists. Others go on to graduate school or take jobs with government conservation agencies. Some intend to enter law, medicine or business. Some are interested in urban planning, environmental studies, engineering, archeology, science education or oceanography as advanced areas. Geology is suited to all these.

The program at Iowa stresses theoretical geology and paleontology more than the engineering or agricultural phases of the discipline. The Department specializes in relating scientific thought to the study of the earth. Geology majors receive at least an academic year's work in basic scientific areas—physics, biology, chemistry and mathematics—addition to a course in each major area of geology.

Each year more than 1,000 students enroll in Earth Science 11:23 Earth History and Resources and 11:24 Man and His Physical Environment. This team-taught, laboratory-discussion lecture course designed to fulfill the College of Liberal Arts requirement for natural science core studies.

Other offerings for nonmajors include a lecture sequence for persons interested in a general survey of geology and several advanced courses without prerequisites—paleontology, geology of Iowa, history of the vertebrates, a planet in crisis, minerals and world affairs, landforms.

Undergraduate Programs

Students majoring in geology must meet the general require-
Mathematics

Ten semester hours of university-level mathematics, which may include computer science or statistics.

Geology

Eight semester hours of chemistry, and recommended courses in other sciences and social sciences appropriate to the student's objectives.

The Junior Seminar

All geology majors take part in a once-a-week junior 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 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, typically with chemistry, physics, zoology and anthropology.

Original Research

A junior or senior who is ready to pursue original research for credit 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.

Graduate Programs

Students planning to take graduate work in geology should have completed geology and supporting courses equivalent to those required of undergraduate geology majors at Iowa. Deficiencies may be remedied at the beginning of graduate study.

All graduate students in geology are required to perform teaching, research or other appropriate services for the Department, as part of the degree program.

Prospective graduate students in geology should consult the "Rules and Regulations" in the "Graduate College" section of the Catalog for general admission and graduate study requirements.

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 in 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 credits, and at least 24 hours in residence at Iowa.

Matter'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 (a + A) grade-point average on University of Iowa graduate coursework 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 theses are considered particularly appropriate. 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 must submit a written report and discuss it at the university.

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 students 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 any field of the thesis.

The Master of Arts in Teaching (Earth Sciences)

This program enables students to combine certification to teach secondary school with participation in a specialized graduate curriculum. Awarded by the College of Education, the M.A.T. degree requires at least 20 semester hours of graduate study in professional education 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 achieving competence in two languages or in one language and one tool, or by achieving proficiency in one language.
Geology

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 areas of geological specialization.

Coursework taken to satisfy language and tool requirements may not be applied to credit requirements for the degree.

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, Course crosslisted between Geology and other departments is 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 Mineral Exploration Geophysics
- Petroleum-Mineralogy
- Petrology
- Igneous and Metamorphic Petrology
- Experimental Petrology
- Structural Geology
- Geotectonics
- Structural Analysis
- Remote Sensing
- Stratigraphy
- Physical Stratigraphy
- Biostratigraphy
- Depositional Environments
- Sedimentary Petroleum
- Sedimentation
- Sandstone and Carbonate Petrology
- Physical Stratigraphy
- Pleistocene Studies
- Pleistocene Geology
- Vertebrate Paleontology
- Palynology
- Palaeontology
- Paleoclimatology
- Biostatigraphy
- Geomorphology
- General Geomorphology
- Glacial and Pleistocene
- Remote Sensing
- Environmental Geology
- Ground Water
- Remote Sensing
- Geology
- Other Minor Subjects
- Botany
- Zoology
- Chemistry
- Physics
- Geography
- Hydrology
- Archaeology-Antropology
- Science Education
- Others

Cooperative Activities

The Department has joint professorships with the Iowa Geological Survey and the Department of Botany and students sometimes work on projects for the Survey.

There is also cooperation between the Geology, Geography, Anthropology, Chemistry and Physiology departments inservice, expertise, joint instrumentation and equipment.

Field Trips

Field trips are integral parts of several courses in geology. Week-end general-interest events are frequent. Iowa City is situated in the midst of the richly fossiliferous Paleozoic bedrock. Marine and terrestrial fossil assemblages, extensive reefs and unique geode sites are available within a few hours' drive. All four Pleistocene glaciers are represented in Iowa and each offers distinctive landforms and fossil assemblages.

Spring occurs provides time for longer trips which are available to all geology students. In recent years these have included the Grand Canyon, the Florida Keys, the southern Appalachians, the Big Bend Region of Texas and the Okanagan. Advanced courses for seniors and graduate students regularly visit Colorado, Ontario, Kansas, Oklahoma and California.

Faculty Roster

Professors Forstall, Glenister, Hoppin, Klapper, Semken, Tuttle; associate professors Schneeberger, Tezak, Tubbs, professor emeritus Toner; associate professors Clark, Drake, Heckel, McCallum, Schablon, Swett; assistant professors Baker, Carman; research associate Strimp; faculty rosters.

Courses

Primary for Undergraduates

121: Lecture in Earth History and Geology 2 s.h.
- Not open to those who have not completed 121.1 or 121.2.

123: Lecture in Man and His Physical Environment 2 s.h.
- Not open to those who have had C314. 121.1 and 121.2 examine directly and modern environments and their effects with the processes by which they evolve. Evolution of organisms and man's interest in and control of present environment.

133: Principles of Physical Geology 2 s.h.
- Introductory course focusing on processes that have generated and are active today.

Geology

- Competence is normally achieved by satisfactory completion of a one-year sequence of appropriate courses, proficiency by satisfactory completion of a two-year sequence.
- 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 areas of geological specialization.
- Coursework taken to satisfy language and tool requirements may not be applied to credit requirements for the degree.
- 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, Course crosslisted between Geology and other departments is 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 Mineral Exploration Geophysics
    - Petroleum-Mineralogy
    - Petrology
    - Igneous and Metamorphic Petrology
    - Experimental Petrology
    - Structural Geology
    - Geotectonics
    - Structural Analysis
    - Remote Sensing
    - Stratigraphy
    - Physical Stratigraphy
    - Biostratigraphy
    - Depositional Environments
    - Sedimentary Petroleum
    - Sedimentation
    - Sandstone and Carbonate Petrology
    - Physical Stratigraphy
    - Pleistocene Studies
    - Pleistocene Geology
    - Vertebrate Paleontology
    - Palynology
    - Palaeontology
    - Paleoclimatology
    - Biostatigraphy
    - Geomorphology
    - General Geomorphology
    - Glacial and Pleistocene
    - Remote Sensing
    - Environmental Geology
    - Ground Water
    - Remote Sensing
    - Geology
    - Other Minor Subjects
    - Botany
    - Zoology
    - Chemistry
    - Physics
    - Geography
    - Hydrology
    - Archaeology-Antropology
    - Science Education
    - Others
- Cooperative Activities
  - The Department has joint professorships with the Iowa Geological Survey and the Department of Botany and students sometimes work on projects for the Survey.
  - There is also cooperation between the Geology, Geography, Anthropology, Chemistry and Physiology departments in service, expertise, joint instrumentation and equipment.
  - Field Trips
    - Field trips are integral parts of several courses in geology. Week-end general-interest events are frequent. Iowa City is situated in the midst of the richly fossiliferous Paleozoic bedrock. Marine and terrestrial fossil assemblages, extensive reefs and unique geode sites are available within a few hours' drive. All four Pleistocene glaciers are represented in Iowa and each offers distinctive landforms and fossil assemblages.
    - Spring occurs provides time for longer trips which are available to all geology students. In recent years these have included the Grand Canyon, the Florida Keys, the southern Appalachians, the Big Bend Region of Texas and the Okanagan. Advanced courses for seniors and graduate students regularly visit Colorado, Ontario, Kansas, Oklahoma and California.
- Faculty Roster
  - Professors Forstall, Glenister, Hoppin, Klapper, Semken, Tuttle; associate professors Schneeberger, Tezak, Tubbs, professor emeritus Toner; associate professors Clark, Drake, Heckel, McCallum, Schablon, Swett; assistant professors Baker, Carman; research associate Strimp.
- Courses
  - Primary for Undergraduates
    - 121: Lecture in Earth History and Geology 2 s.h.
      - Not open to those who have not completed 121.1 or 121.2.
    - 123: Lecture in Man and His Physical Environment 2 s.h.
      - Not open to those who have had C314. 121.1 and 121.2 examine directly and modern environments and their effects with the processes by which they evolve. Evolution of organisms and man's interest in and control of present environment.
    - 133: Principles of Physical Geology 2 s.h.
      - Introductory course focusing on processes that have generated and are active today.
German

Department Head: Edward D. Strachman
Degree offered: B.A., M.A., Ph.D.

The primary function of the Department of German is to transmit to American liberal arts students knowledge of the language and literature, the civilization and culture traditionally designated as German.

University graduates with a major in German frequently enter the teaching profession. 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.

Advanced Placement

Normally, for purposes of tentative placement, two units of high school language instruction are considered equivalent to one unit on the college level. For example, a student who has completed two years of high school German language instruction is ordinarily expected to register for the second year of college German (13:2: Third-Semester German); but if such a student is not sufficiently prepared for 13:2, he or she can secure permission to register for 13:1 Second-Semester German, or even 13:1 First-Semester German. Preficiency-placement exams are given to students for whom the regular procedure does not seem suitable.

Undergraduate Requirements

In addition to the general requirements of the College of Liberal Arts (see "College of Liberal Arts"), students majoring in German are normally required to complete 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.

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 sequence.)

Third Year

13:31 Introduction to Modern German Literature 3 s.h.
13:32 Introduction to Modern German Literature II 3 s.h.
13:33 Intermediate Composition and Conversation I 3 s.h.
13:34 Intermediate Composition and Conversation II 3 s.h.
(13:33 and 13:34, and 13:32 and 13:34 may be taken concurrently.)

Fourth Year

13:41 Advanced Composition and Conversation 3 s.h.
13:53 German Cultural History 3 s.h.
13:111 Survey of German Literature I 3 s.h.
13:112 Survey of German Literature II 3 s.h.

Courses to be taken in sequence after initial placement, unless a variation in 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, graduates as well as undergraduates, are urged to supplement their degree programs with 16:141 and 16:142 (German History courses).

A student who handles German with native proficiency may declare German as a second major but is expected to complete a full first major in a subject in which he or she has no such obvious advantage over his or her peers.

Teacher Certification

Because the College of Education requirements for teacher certification are subject to change and could conflict at times with the sequential requirements of the major in German, it is imperative that the student consult with the department chairman or undergraduate advisor to help ensure the successful completion of the certification program.

The Teaching Minor

In addition to the basic program of the first and second year, these courses or their equivalents constitute a teaching minor in German:

13:31 Introduction to Modern German Literature I
13:32 Introduction to Modern German Literature II
13:33 Intermediate Composition and Conversation I
13:34 Intermediate Composition and Conversation II
13:101 Advanced Composition and Conversation

Honors in German

German majors of junior or senior standing with a grade-point average of at least 3.0 overall and 3.5 in German may enroll in this program. An extensive reading program, 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 Honors students 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 German by working with recorded materials in the Language Media Center.

An extensive collection of works and periodicals in the University Library facilitates research in all major areas of German literature and Germanic linguistics at all levels of study.

Study Programs Abroad

The Department of German participates in the Campus Abroad programs in Austria. Sponsored by the three Iowa Regents Universities, the programs are open to students of all disciplines.

One is a seven-week program offering up to eight semester hours of credit. The program is designed to provide a sound cultural and academic experience to all participants; future
teachers of German especially will benefit. The first three weeks of this program will be conducted at Millstatt. Instruction in both languages and culture will be on these levels—intermedi-
ate, advanced and very advanced. The second four-week session will be held in Vienna where faculty of the International Uni-
versity Courses at the University of Vienna will conduct moor-
ing classes daily. One week for personal travel will conclude the program.

The second program comprises a summer course more exten-
sive than that described above, plus a full semester at the Philo-
sophische Akademie in Klagenfurt, Austria. Courses offered are
German conversation, composition, civilization, law and
linguistics; education; humanities and fine arts; social sciences;
natural sciences and mathematics; religion; and physical educa-
tion. Up to 30 semester hours of credit will be earned.

To be admitted to either program, the prospective participant
must qualify for admission to one of the three Iowa Regents
University, and must have completed a minimum of 12 semes-
ter hours (or the equivalent) of college-level German.

Tuition, room and board are available for qualified applicants.
For further information, write to the Department of German, The
University of Iowa.

Graduate Study Requirements

Master of Arts Degree with Thesis
Graduate students of German who demonstrate an interest in
and potential for productive scholarship and who plan to contin-
ue to the doctorate should elect the program with thesis. The
thesis program requires a minimum of 60 semester hours, or
equivalent, of graduate-level work. If the student has not com-
pleted major courses, or equivalents, in the Department's under-
graduate program, he or she will include them along with the
courses required for the Master of Arts. The candidate may
qualify for graduate credit for such make-up work.

Additional courses are selected with the approval of the grad-
uate adviser.

With the graduate adviser's approval, some of the 30 semes-
ter hours required for the degree may be taken outside the De-
partment; in such related subjects as philosophy, history,
linguistics or other languages.

Normally two semester hours of credit may be received for
satisfactory completion of the thesis. The thesis may be either
linguistic or literary, and is subject to the approval of the facul-
ty. Students planning to go on to the Ph.D. degree are required
to write a thesis unless they have Department approval to do
otherwise.

Before the M.A. exam can be administered—usually after ac-
ceptance of the M.A. thesis—the candidate must show a compe-
tence level in the 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. Degree Without Thesis
A graduate student who desists his or her program to be orient-
ed in the direction of optimum preparation for secondary school
be倒在, government service, translation, etc., may elect the
one without thesis. This program requires a minimum of 36 sem-
ester hours of coursework and is considered terminal. The
same course requirements outlined for the M.A. with thesis ap-
ply to candidates for the M.A. without thesis; however, students
in this program should, with the approval of the graduate advis-
er, choose as electives those courses which will best prepare them.

Courses Required for the Master of Arts Degree

13.102 3 s.h. 13.285 3 s.h.
13.103 3 s.h. 13.284, 243, 245 3 s.h. (any one)
13.105 3 s.h. 13.251, 261, 271 3 s.h. (any one)
13.111 3 s.h. 13.281, 282, 286 3 s.h. (any one)
13.112 3 s.h. 13.281, 294, 295 3 s.h. (any one)
11.201 5 s.h. or approved equivalents
13.202 3 s.h.

Doctor of Philosophy Degree

The Ph.D. degree is awarded upon the satisfactory completion
of 30 semester hours of graduate credit or their equivalents be-

Beyond the requirements for the M.A. degree, and fulfillment
of the requirements of the Department of German and the Gradu-
ate College (see "Graduate College"). The candidate may con-
centrate in either Germanic linguistics or German literature.

The Ph.D. program will normally include the coursework list-
ed below, or approved equivalents, and at least two advanced
specializations. (Credit received toward the M.A. degree may be
applied to the Ph.D.). The remainder of the program is planned by
the candidate in consultation with the graduate adviser in such a
way as to ensure satisfactory balance and capstone. The student
may earn up to 12 semester hours of credit for satisfac-
tory completion of the Ph.D. dissertation. Some graduate cour-
se outside the Department in related subjects may be counted
from the degree with the approval of the graduate adviser.

Wherever possible the dissertation will afford the opportu-
nity and privilege to observing graduate students to gain valuable,
teaching experience under supervision by making available such
awards as teaching research fellowships, teaching assistantships,
etc.

Reading knowledge of French or Russian and of a modern
Scandinavian language or Dutch is required of all doctoral can-
didates in Germanic linguistics; a candidate concentrating in lit-
erature must demonstrate a reading knowledge of French and of
another language which his or her advisor considers is pertinent
to the student's research interests. Competence in these lan-
guages may be demonstrated by two years of college study or
four years of high school study, with a grade of "B" or higher,
or through testing by the Department. The requirements must be
met before the comprehensive exams can be administered.

Recommended courses: doctor of philosophy degree, concentra-
tion in German literature:

13.102 3 s.h. 13.231 3 s.h.
13.103 3 s.h. 13.236 3 s.h.
13.105 3 s.h. 13.271 3 s.h.
13.111 3 s.h. 13.281 3 s.h.
13.112 3 s.h. 13.282 3 s.h.
13.135 3 s.h. 13.285 3 s.h.
13.201 3 s.h. 13.286 3 s.h.
13.202 3 s.h. 13.291 3 s.h.
13.241 3 s.h. 13.294 3 s.h.
13.244 3 s.h. 13.295 3 s.h.
13.245 3 s.h. 13.396 3 s.h.
Faculty Roster

Professor Davidson; students emeriti Fishberg, Funk; associate professor Emmerich Lyle; assistants professors Donauer, Nagel, Parkes, Ranswick, Willows.

Courses

Primarily for Undergraduates

12/11 First Semester German 3 a.h.
Pass units of three-hour course sequence; emphasis on reading and basic structures of German language.

12/12 Second Semester German 3 a.h.
Second unit of three-hour course sequence; study of basic structures of German language continued; emphasis on vocabulary building and reading.

18/17 German Heros and Erotic Literature of the Middle Ages 4 a.h.

12/21 Third Semester German 3 a.h.
Third unit of three-hour course sequence; basic structures of German language reviewed; emphasis on oral reading, basic conversation, and comprehension.

12/22 Fourth Semester German 3 a.h.
Fourth unit of three-hour course sequence; intermediate level of study. Emphasis on conversation and oral proficiency.

12/23 Fourth Semester German: Elementary Composition and Conversations 3 a.h.
Also satisfies foreign language requirement for B.A. degree. Recommended for students who want further training in active use of the language; emphasis on writing compositions, carrying on conversations, etc.

12/24 Introduction to Modern German Literature I 3 a.h.

12/25 Intermediate Composition and Conversation I 3 a.h.

12/26 Introduction to Modern German Literature II 3 a.h.
Continuation of 12/25. Prerequisite: 12/21 or equivalent. Same as School of Letters: 208-35.

12/27 Intermediate Composition and Conversation II 3 a.h.
Continuation of 12/26, with more emphasis on original composition and comprehension. Prerequisite: 12/25 or equivalent.

12/28 German Film Reading, Research, Analysis of Part I of Film. Same as School of Letters: 108-35 and Drama: 123.

12/29 Honors Program in German 3 a.h.

12/35 Austrian Literature 3 a.h.

12/37 Significant Modern Works of the 19th Century and Modern Times 3 a.h.

For Undergraduates and Graduates

Some of the courses listed below, as well as those listed under "Primarily for Graduates," are offered at irregular intervals.

12/100 Individual German 3 a.h.
Open only to German majors and minors.

12/101 Advanced Composition and Conversation 3 a.h.
Required for undergraduate German major and minors. Prerequisite: 12/34 or equivalent.

12/102 Advanced Composition and Conversation 3 a.h.
Primarily for non-graduate students; permission of instructor required. Prerequisite: 12/31 or equivalent.

12/103 German Phonology 3 a.h.
Analysis of structure of sound systems of German language and introduction to phonetics and phonology of other Germanic languages. Same as Linguistics: 103-14.

12/105 German Cultural History 3 a.h.

12/107 Teaching of German 3 a.h.
One-day-in-three course for graduate teaching assistants in the Department.

12/111 Survey of German Literature I 3 a.h.
Survey of development of German literature from prehistoric times to 1775. Prerequisite: 12/33 or equivalent. Same as School of Letters: 108-11.

12/112 Survey of German Literature II 3 a.h.
Survey of German literature from 1775 to present. Prerequisite: 12/11 or equivalent. Same as School of Letters: 108-12.

12/115 Survey of German Literature from 1775 to Present 3 a.h.
Survey of German literature from 1775 to present. Prerequisite: 12/11 or equivalent. Same as School of Letters: 108-12.

12/117 German Literature in Translation 3 a.h.
Readings in German literature in translation. Prerequisite: satisfactory completion of previous work. Same as School of Letters: 108-11.

12/119 Yiddish Literature in Translation 3 a.h.
Works of German and other writers of Yiddish literature in 19th and 20th centuries. Prerequisites: some basic knowledge of Yiddish.

12/126 Welsh and Foreign Languages 3 a.h.

12/150 Critical Analysis of the Plays, Prose, and Poetry of Shakespeare, and of His Influence on Modern Literature 3 a.h.

12/151 First-year Prof. Reading 3 a.h.

12/152 Second-year Prof. Reading 3 a.h.

12/155 Third-year Prof. Reading 3 a.h.

12/156 Fourth-year Prof. Reading 3 a.h.

12/165 Roman Law and the Impact of Science 3 a.h.
Relationship of scientific to social and humanistic thought. Same as Sociology: 103-14 and English: 103-14.

12/176 The Feast of Tabernacles 3 a.h.

12/177 The Feast of Tabernacles 3 a.h.

12/180 Advanced Studies 3 a.h.
Special projects of German literature and linguistics; open to graduate majors in German literature and linguistics.

12/190 German Prosestrip 3 a.h.
General introduction to graduate study in area of German literature and German
History

13:292 German Prosaesthetik 3 s.h.
Combination of 13:291.

13:290 The German Novel 3 s.h.
A course of varying content, broad scope and treatment. May be repeated for credit.

13:293 German Lyric 2 s.h.
A course of varying content, broad scope and treatment. May be repeated for credit.

13:294 The German Drama 2 s.h.
A course of varying content, broad scope and treatment. May be repeated for credit.

13:296 The German Drama and the Storm and Stress 2 s.h.

13:227 The German Novel 2 s.h.

13:241 History of the German Language 3 s.h.
Development of German language and dialects from prehistoric times to present. Same as Linguistics 133-231.

13:233 Middle High German 3 s.h.
Development and sources of High German literary language in period from 11th to 14th centuries; primarily for students continuing in linguistics. Same as Linguistics 133-223.

13:244 Middle High German Literature 3 s.h.
Primarily for students continuing in literature.

13:245 Old High German 3 s.h.

13:246 Old Saxon 3 s.h.
Study of language of early Low German documents, and of historical phases of Low German with respect to other Germanic languages. Prerequisite: Gothic or Old High German or Old English. Same as Linguistics 121-234.

13:247 Gothic 3 s.h.
Gothic (with its importance for understanding of historical development of Germanic languages); introduction to comparative Indo-European linguistics. Same as Linguistics 121-232.

13:248 History of the Scandinavian Languages 3 s.h.
Development of Scandinavian languages from earliest times to present; comparative study of linguistic areas in Danish, Swedish and Norwegian. Prerequisite: knowledge of one modern Germanic language. Same as Linguistics 133-232.

13:251 Early German Literature 3 s.h.

13:252 German Literature from earliest Ancestry to Middle High German period. 3 s.h.

13:251 German Literature of the Renaissance and Reformation 3 s.h.

13:252 German Literature of the Renaissance and Reformation 3 s.h.

13:253 German literature of the Baroque 3 s.h.

13:254 German literature of the Baroque and Rococo 3 s.h.

13:255 The Age of Enlightenment and the Period of Storm and Stress I 3 s.h.

13:256 The Age of Enlightenment and the Period of Storm and Stress II 3 s.h.
Combination of 13:255, but may be taken separately.

13:256 Goethe 3 s.h.

13:257 Goethe 3 s.h.
His life and thought as major literary work.

13:258 Schiller 3 s.h.
Frederic Schiller: his life and thought, historical and philosophical works; his position in his own time and posthumously.

13:291 German Romance 3 s.h.

13:292 German Romanticism 3 s.h.

13:296 Special Topics in German Literature 3 s.h.
May be repeated for credit.

13:297 Special Topics in German Philology 3 s.h.
May be repeated for credit.

13:300 Master's Thesis 3 s.h.

13:311 Seminar in Linguistics 3 s.h.
May be repeated for credit. Same as Linguistics 133-345.

13:312 Seminar in Proto-Germanic Linguistics 3 s.h.
May be repeated for credit. Same as Linguistics 133-351.

13:350 Pre-Comprehensive Registration 3 s.h.

13:371 Seminar in Early German Literature 3 s.h.
May be repeated for credit.

13:381 Seminar in German Literature of the 16th Century 3 s.h.
May be repeated for credit.

13:382 Seminar in German Literature of the 17th Century 3 s.h.
May be repeated for credit.

13:383 Seminar in German Literature of the 20th Century 3 s.h.
May be repeated for credit.

13:399 Theory of Literature 3 s.h.

13:400 Ph.D. Dissertation 3 s.h.

Greek
See "Classics."

History

Department Chairman: Lawrence Lebow
Degrees offered: B.A., M.A., Ph.D.

The work of the Department of History is to enlarge knowledge and understanding and to provide students with opportunities to gain information and learn methods for understanding their world in the light of its past. In addition to offering these essential elements of liberal education, the Department trains professional historians and teachers of history, serves those who require a knowledge of a period or aspect of history as background for their own specialized interests in other fields, and participates in several interdisciplinary programs such as American Civilization, Afro-American Studies and Asian Studies.

Undergraduate Majors
Baccalaureate graduates in history go into a variety of positions in business, public service or journalism. Many plan further training in history, law, religion, library science or social work.

There are three versions of the undergraduate major in history. The amount of work in American history that may count toward the major requirements is limited to ensure that the student primarily interested in American history will avoid over-mindlessness; course requirements in related areas are imposed to provide further breadth in the student's experience. Students who intend to teach in schools ordinarily select the course of study under Plan B.
General Major in History (Plan A)
The general major is for students with a general interest in history. The program requirements are:
- 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 this requirement.
- Three semester hours in 16:50 or 16:51 Colloquium for History Majors.
- A minimum of 16 to 18 semester hours in related courses in anthropology, economics, fine arts (excluding studio courses), geography, literature (excluding workshop courses), philosophy, political science, psychology, religion and sociology. Alternatively, this requirement may be met by completion of a second major in one of these areas. Core courses and courses taken to satisfy core requirements will not be counted toward the related-area requirement.
- It is recommended but not required that the student pursuing the general major meet the College of Liberal Arts historical-cultural core requirements with 11:29-30 Problems in Human History, 11:31-32 Western Civilization, or 11:55-56 Civilization of Asia.

Prospective Teachers in History (Plan B)
To enroll under Plan B, the student must secure approval from one of the advisors for majors who intend to become teachers.

The program requirements are:
- Satisfaction of the historical-cultural core requirements with either 11:29-30, 11:31-32, or 11:55-56.
- At least 18 semester hours is courses offered by the History Department, including at least eight hours in American history and at least three hours in ancient or medieval European history.
- At least 24 semester hours of work in basic courses in three of these areas: social sciences, anthropology, 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. (See "College of Education.")

Honors Major (Plan C)
The honors major is for students of superior ability who want an extremely flexible program enabling them to pursue special interests and enjoy the experience of individual research. The seminars for honors students are designed to bring such students together for intellectual stimulation. This plan provides an opportunity for research. Successful completion of the honors seminar leads to the Bachelor of Arts degree with Honors in History. Requirements are:
- A minimum of 24 semester hours of work in history, with at least nine hours in the Department's honors offerings, which may include up to six semester hours of honors thesis credit.
- Courses outside the Department (see Plan A).
- Successful completion and oral defense of an honors thesis.
- To undertake the honors major in history, the student must be admitted to the College of Liberal Arts Honors Program, by the director of that program, and to the Honors Program in History, by the Department. Application for admission must be made by the beginning of the junior year, and may be made earlier.

Graduate Study
The graduate programs in history prepare students to teach in high schools or colleges, and for such occupations as publishing, commercial research and government or other public service. With additional specialized training, students of history become qualified for careers in archival work, library work or historical site preparation and display. Some students enter the program leading to degrees in both law and history.

The Master's Degree
Plan A: This program is for students who plan to work for the doctorate's degree. It requires a minimum of 30 semester hours of credit, including the completion of a research essay. The candidate must earn at least 24 semester hours of credit in history. Twelve, including at least one seminar, must be in the area of the student's essay topic, and at least six must be in a second division, including either a seminar or a reading course.

The essay in the major division is based on original research and should be in the vicinity of 10,000 to 15,000 words in length, depending on the magnitude of the subject. Work on the essay will normally begin in the semester in the major division and be continued with 16:296 Individual Graduate Study, in which rewriting will be completed under the guidance 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: Students who complete the M.A. under this plan may not write a candidate for the doctorate in history. The candidate must earn at least 24 semester hours of credit in history. Of these, at least 12 must be taken in one division, and 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 they are to be completed, the candidate must take an oral and written comprehensive examination in the major division.

Doctor of Philosophy
Students who earn the M.A. under Plan A are admitted to the Ph.D. program upon the favorable recommendation of the examining committee. Students who earn an M.A. at another university must meet the general requirements for admission to the Graduate College (see "Graduate College") and must submit a specimen of their writing, such as a seminar paper or an M.A. thesis.

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 history, apart from 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. The Depar-
tment has no common language requirement for the Ph.D., but the
supervisor may require the candidate to demonstrate a read-
ing knowledge of one or more foreign languages and proficient-
cy in the use of other tools of study. The candidate may not
complete the comprehensive examination until these require-
ments have been fulfilled.

The comprehensive written/oral examination will cover four
distinct fields, at least three of them in history. The fields in
history must be chosen from at least two different divisions
among these:
The Ancient World
Medieval Europe
Europe, 1500 to 1815
Europe, 1815 to Present
Russia and the Soviet Union
United States History
Latin American History
British Empire and Commonwealth
Chinese History
Japanese History

The committee may define and limit the individual fields for
examination. It may also set, separately for each field, the charac-
ter of the written portion of the comprehensive examination,
which may take the form of a syllabus, a critical bibliogra-
phy, a topical paper or any other form or combination of these
or other forms that the committee deems suitable. The oral por-
tion of the comprehensive examination will focus on issues and
problems arising from the examination papers.

Special Facilities
The University Library is strong in all aspects of U.S. history. It
houses the Henry A. Wallace papers and related collections, as
well as a fine collection of European history, especially
European history, the spec-
cial strengths are in French and English materials. The Iowa
State Historical Society in Iowa City and the Herbert Hoover
Presidential Library in West Branch 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.

Graduate Admission
All applicants for admission, whether for the M.A. or the Ph.D.
program, must meet the general requirements for admission to
the Graduate College. In addition, they must 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 admissions are due February 15 for the fall semes-
ter or November 10 for the spring semester. An applicant must
take the Graduate Record Examination in order to be considered
for admission. An undergraduate history major is not required for
admission to the graduate program.

Guide to Graduate Study
Further information on graduate study is contained in the De-
partment’s Guide to Graduate Study sent to all applicants for
admission. The Guide is revised every spring to include the lat-
est changes in the faculty, the courses to be offered the follow-

ing year and the research interests of the members of the faculty,
as well as detailed regulations on study toward ad-
vanced degrees and other information of interest to prospective
students.

Faculty Roster

Professors Adeleke, Dykstra, Erland, Giesey, Goldstein, Haley, Heneman, Horvitz, James, Lafore, Pelenski, Persons, Rubnac, Schoonhoorn, Spitzer, Sunderland; profes-
sors emeriti Livingston, Mead; associate professor Carder; as-
sistent professors Boszormeny, Moon; instructors Arnaud, Green-
ough, Rubel, Whiteley.

16:00 Colloquium for History Majors
3 a.h.
16:01 Colloquium for History Majors
3 a.h.
3 a.h.
3 a.h.
16:00 Introduction to Afro-American Culture: A

Historical Approach
3 a.h.
Survey of black history, including history of Africa south of the Sahara from an
classical time to present, history of slavery in the new world; half of the emphasis is
on U.S. history. Open to American Civilization 45-40.
16:01 American History, 1492-1877
3 a.h.
Political, economic and social history of the United States from the Age of
Discovery through the Civil War and Reconstruction.

16:02 American History, 1877-Present
3 a.h.
Political, economic and social history of the United States from 1877-present.

16:03 Religion in American History, 1607-1882
3 a.h.
Development of religion through politics and institutional life in the United States
16:07 Religion in American History 1800-Present
3 a.h.
Development of religion through politics and institutional life in the United States
Continued from 16:02, but may be taken independently. Same as Religion 22-72.
16:08 Introduction to Latin America
3 a.h.
Emphasis on elements of similarity in society and institutions from colonial times
to modern times; selected countries and panels, preparatory for undergraduates
who wish to take courses in Latin American history numbered above 500.
16:11 Individual Study: Undergraduate
arr.
16:12 Individual Study: Undergraduate
arr.
16:13 Honors Tutorial
arr.
16:14 Honors Tutorial
arr.
16:15 Honors Seminar: Problems in European History
arr.
16:16 Honors Seminar: Problems in American History
arr.
16:17 Honors Tutorial
arr.
16:19 History: Background of Contemporary Issues
arr.
16:18 Historical Background of Contemporary Institutions
arr.
16:19 Survey of the Ancient Near East and Greece
3 a.h.
Survey, economic, political, and religious history of ancient civilizations in the
region from Mesopotamia to Egypt and the area of influence of Alexander the
Great.
16:20 The Nauraliste World and Rome
3 a.h.
Social, economic, political, and religious history of Graeco-Roman world from
the Augustan age to the death of Trajan. Same as History 196.
16:24 Medieval and Renaissance to Antiquity
3 a.h.
Emprise.
16:25 Study of this phenomenon in Neo-Babylonia, Persian and Judeo-Arabic,
date in Italy under the Roman Republic.
16:26 Revolution in Early China
3 a.h.
Study, based on original sources in translation, of methods used in geo-
draphic areas for expressing, preserving, or utilizing knowledge; leading
to revolution and civil war. Restricted to 16:25.
16:27 Survey of Medieval Civilization to 1500
3 a.h.
Survey and interpretation of European history from 500 A.D. to the late Middle
Ages, including political and economic foundations of Western civilization. Not open to freshmen.
18:116 United States in the Middle Period, 1840-1877
18:117 American Urban History, 1830-1879
18:118 American Urban History Since '76
18:119 Religious Thought in America, 1827-1900
18:120 Religious Thought in America Since 1900
18:121 History of Latin America in the Atlantic World, 1780-1800
18:122 Enlistment, Institutionalization under Bureaucratic, revolutions for independence and liberal reforms in Latin America, studied comparatively within a broader context contrasting Western Europe and North America. Presentable for undergraduates: 16:19
18:123 Modern Mexico
18:125 History of India to 1750
18:126 History of India Since 1750
18:127 History of China, 1600-1900
18:128 Modern China, 1600-1900
18:129 Political and social developments of China, emphasis upon Western impact and Chinese response, and changes wrought by the Chinese Revolution. Same as East Asian Languages and Literatures 35:31
18:130 Premodern Japan to 1887
18:131 Medieval Japan, 800-1500
18:132 Medieval Japan since 1500
18:133 Social and economic developments in medieval Japan and the culture of samurai. May be taken as an independent work. Same as East Asian Languages and Literatures 35:31
18:134 Recent Revolutionary Developments in East Asia
18:135 Studies in the History of Women in America
18:136 Historical Sociology and the History of Ideas
18:137 European and American intellectual history
18:138 Atlantic-Euro-American Intellectual History
18:139 Migration, secularization, and their effects on the quality of American life in the 20th century. Same as American Civilizations 45:14
18:140 United States in the Middle Period, 1840-1877
18:141 American Urban History, 1830-1879
18:142 American Urban History Since '76
18:143 Religious Thought in America, 1827-1900
18:144 Religious Thought in America Since 1900
18:145 History of Latin America in the Atlantic World, 1780-1800
18:146 Enlistment, Institutionalization under Bureaucratic, revolutions for independence and liberal reforms in Latin America, studied comparatively within a broader context contrasting Western Europe and North America. Presentable for undergraduates: 16:19
18:147 Modern Mexico
18:149 History of India to 1750
18:150 History of India Since 1750
18:151 History of China, 1600-1900
18:152 Modern China, 1600-1900
18:153 Political and social developments of China, emphasis upon Western impact and Chinese response, and changes wrought by the Chinese Revolution. Same as East Asian Languages and Literatures 35:31
18:154 Premodern Japan to 1887
18:155 Medieval Japan, 800-1500
18:156 Medieval Japan since 1500
18:157 Recent Revolutionary Developments in East Asia
18:158 Studies in the History of Women in America
18:159 Historical Sociology and the History of Ideas
18:160 European and American intellectual history
18:161 Atlantic-Euro-American Intellectual History
18:162 Migration, secularization, and their effects on the quality of American life in the 20th century. Same as American Civilizations 45:14
16:248 Readings: Comparative Intellectual History
Problems common to Christianity, Great Britain and United States since 1560
4 s.h.
Same as Political Science 30.444

16:250 Readings: European Diplomatic History
4 s.h.

16:255 Readings: Central and East Central Europe
19th-20th Centuries
4 s.h.

16:256 Readings: Civilization in the New World
European and American policies on political and social systems as well as Amer- Indian policies. Interaction of European, African, Asian, and African American cultures. 3 s.h.

16:257 Seminar: The American Middle Class
Historical development. Suitability of definition and nature of role. 3 s.h.

16:259 Seminar: The Middle and Lower Classes
19th and 20th centuries. 3 s.h.

16:259 Seminar: The Middle and Lower Classes
19th and 20th centuries. 3 s.h.

16:264 Readings: The Middle East
3 s.h.

16:264 Seminar: The Modern Middle East
3 s.h.

16:265 Seminar: The Global Age and the World System
3 s.h.

16:265 Seminar: The Global Age and the World System
3 s.h.

16:266 Seminar: The Middle East
3 s.h.

16:267 Seminar: The Middle East
3 s.h.

16:267 Seminar: Contemporary United States
3 s.h.

16:268 Readings: Contemporary United States
3 s.h.

16:271 Seminar: African Frontier
3 s.h.

16:272 Seminar: African Frontier
3 s.h.

16:275 Seminar: African History, 1500-1900
3 s.h.

16:276 Seminar: Afro-American History
3 s.h.

16:277 Seminar: American Civilizations 45.255
3 s.h.

16:278 Seminar: African-American History
4 s.h.

16:286 Seminar: African-American History
4 s.h.

16:286 Seminar: African-American History
4 s.h.

16:288 Readings: Latin American History
3 s.h.

16:290 Seminar: Latin American History
3 s.h.

16:291 Seminar: Chinese History
3 s.h.

16:292 Seminar: Chinese Languages and Literature 26.292
3 s.h.

16:293 Seminar: Chinese Languages and Literature 26.293
3 s.h.

16:294 Seminar: Japanese History
3 s.h.

16:294 Seminar: East Asian Languages and Literatures 26.294
3 s.h.

16:295 Seminar: East Asian Languages and Literatures 26.295
3 s.h.

16:296 Individual Study: Graduate
2 s.h.

16:296 Philosophy of History
2 s.h.

16:296 Philosophy of History
2 s.h.

16:298 Historiography
2 s.h.

Home Economics
Department Chairperson: Sara C. Wolters
Degree offered: B.A., B.S., M.A., M.S., M.A.T.

Home economics as a career offers a wide range of opportuni-
ties: teaching, dietetics, merchandising, interior and textile de-
gign, product development and quality control in textile and food industries, consumer relations, family life education and services, food service management, and service with continuity or government agencies. The undergraduate program prepares students for immediate employment as professional home econ-
omists. Students who receive the master's degree are prepared for college and university teaching and further graduate study as well as the careers above.

Concentration in design and housing, family development, food and nutrition, home economics education or textiles and clothing makes it possible for undergraduate majors to develop specialization. The home economics core provides a profession-
al orientation and basic understanding of relationships among the various areas of specialization within home economics. Joint programs may be arranged within home economics and with other fields of study such as journalism, art, social work and education.

Undergraduate Requirements
In meeting the general requirements for the B.A. or B.S. degree at the College of Liberal Arts, students majoring in home economics need to select courses in other departments which also are prerequisites for specific home economics courses. In addition to the Liberal Arts core requirements, students complete the home economics core made up of 17:190 Seminar: Home Economics, and one course from each of the following subject matter areas within the Department: design and housing, family development, food and nutrition, and textiles and clothing. The student should select all courses in consultation with his or her faculty adviser, developing a program of study based upon interest and professional goals. The Bachelor of Arts degree is available in each of the five areas of specialization. In addition, food and nutrition, textiles, and home economics education offer courses leading to the Bachelor of Science degree.

The Bachelor of Arts
Design and Housing
Students concentrating in design and housing are prepared for careers in residential and commercial interior design, space plan-
ing, design consulting, merchandising, fabric design and weav-
ing. This program emphasizes design, behavioral sciences and the humanities.

Required
17:50 Design for the Home
3 s.h.
17:54 Interior Design: Principles and Procedures
3 s.h.
17:80 Introduction to Textiles
3 s.h.
17:81 Textile Fibers
4 s.h.
17:112 Family Economics
3 s.h.
17:155 Survey of Traditional Interiors
4 s.h.
17:160 Textile Design: Printing and Dyeing
3 s.h.
17:165 Family Housing
3 s.h.
17:190 Seminar: Home Economics
2 s.h.
A course in family development
3 s.h.
A course in food and nutrition
3 s.h.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:1</td>
<td>Elements of Art 2 or 3 s.h.</td>
<td></td>
</tr>
<tr>
<td>15:3</td>
<td>Art Forms I 4 s.h.</td>
<td></td>
</tr>
<tr>
<td>15:4</td>
<td>Art Forms II 4 s.h.</td>
<td></td>
</tr>
<tr>
<td>15:20</td>
<td>Basic Design 2 s.h.</td>
<td></td>
</tr>
<tr>
<td>17:10</td>
<td>Growth and Development of the Young Child 3 s.h.</td>
<td></td>
</tr>
<tr>
<td>17:11</td>
<td>Management of Family Resources 3 s.h.</td>
<td></td>
</tr>
<tr>
<td>17:15</td>
<td>Parent-Child Relationships 3 s.h.</td>
<td></td>
</tr>
<tr>
<td>17:17</td>
<td>Exceptional Families 1 s.h.</td>
<td></td>
</tr>
<tr>
<td>17:19</td>
<td>Directed Studies in Family Development 1 s.h.</td>
<td></td>
</tr>
<tr>
<td>17:22</td>
<td>Materials and Methods in Family Life 3 s.h.</td>
<td></td>
</tr>
<tr>
<td>17:190</td>
<td>Seminar: Home Economics 2 s.h.</td>
<td></td>
</tr>
<tr>
<td>31:1</td>
<td>Elementary Psychology 4 s.h.</td>
<td></td>
</tr>
<tr>
<td>34:1</td>
<td>Introduction to Sociology: Principles 4 s.h.</td>
<td></td>
</tr>
<tr>
<td>17:135</td>
<td>Experimental Food II 3 s.h.</td>
<td></td>
</tr>
<tr>
<td>17:142</td>
<td>Nutrition 3 s.h.</td>
<td></td>
</tr>
<tr>
<td>17:190</td>
<td>Seminar: Home Economics 2 s.h.</td>
<td></td>
</tr>
<tr>
<td>17:19</td>
<td>Principles of Chemistry I 3 s.h.</td>
<td></td>
</tr>
<tr>
<td>17:4</td>
<td>Principles of Chemistry II 3 s.h.</td>
<td></td>
</tr>
<tr>
<td>17:6</td>
<td>Organic Chemistry I 3 s.h.</td>
<td></td>
</tr>
<tr>
<td>17:121</td>
<td>Intermediate Chemistry Laboratory II 2 s.h.</td>
<td></td>
</tr>
<tr>
<td>61:157</td>
<td>General Microbiology 4 s.h.</td>
<td></td>
</tr>
<tr>
<td>72:3</td>
<td>Introduction to Human Physiology 4 s.h.</td>
<td></td>
</tr>
<tr>
<td>99:120</td>
<td>The Chemistry of Biological Materials 3 s.h.</td>
<td></td>
</tr>
<tr>
<td>99:130</td>
<td>Metabolism 3 s.h.</td>
<td></td>
</tr>
<tr>
<td>17:13</td>
<td>Food Study 2 s.h.</td>
<td></td>
</tr>
<tr>
<td>17:132</td>
<td>Food Study Laboratory 2 s.h.</td>
<td></td>
</tr>
<tr>
<td>17:133</td>
<td>Meal Management 3 s.h.</td>
<td></td>
</tr>
<tr>
<td>17:134</td>
<td>Experimental Food I 3 s.h.</td>
<td></td>
</tr>
</tbody>
</table>

Home Economics Education
This program leads to vocational certification to teach home economics in secondary schools. Graduates also can enter the careers described in the home economics education program for the B.A. degree. The B.S. program enables students to obtain greater depth and breadth in the natural and social sciences. One year of college-level study in a foreign language is required. In addition to the courses listed under home economics education for the B.A. degree, the following are required:

1. General Chemistry I 3 s.h.
2. General Chemistry II 3 s.h.
3. General Chemistry Laboratory 2 s.h.
4. General Chemistry Laboratory 3 s.h.
5. Two courses from the natural sciences and/or courses numbered 100 or above in anthropology, economics, psychology or sociology 3-5 s.h.

Electives should be selected from journalism, communication, sociology, education, and psychology.

Textile Science
This program prepares students for positions in the textile industry, and for graduate studies in textiles. Emphasis is given to courses in chemistry, physics, and mathematics.

Required:
17:181 Textile Fibers 4 s.h.
17:182 Textile Dyers, Finishes and Detergents 3 s.h.
17:183 Textile Analysis 3 s.h.
17:184 Textile Economics 3 s.h.
17:190 Seminar: Home Economics 2 s.h.
4.11 Elementary Quantitative Analysis 4 s.h.
4.121 Organic Chemistry I 3 s.h.
4.122 Organic Chemistry II 3 s.h.
224.M Method of Technical Problems II 3 s.h.
224.M.20 Elementary Functions 3 s.h.
224.M.25 Calculus I 4 s.h.
29:1 College Physics I 4 s.h.
29:2 College Physics II 4 s.h.

One course from each of the following areas:

Design and Housing 3 s.h.
Family development 3 s.h.
Food and nutrition 3 s.h.

Electives should be selected from chemistry, engineering, computer science, statistics, microbiology and clothing.

The Honors Program:
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 completed in home economics. Honors work in home economics consists of 17:191 Honors Seminar: Home Economics and 17:192 Honors Problems: Home Economics, in which students do creative work or a research project. A written report of Honors thesis and an examination are required. The student's honors advisor, the executive of the Department and another member of the faculty serve as a committee for evaluation of the student's work.

The Graduate Program:
The demand for well-qualified professional home economists exceeds the number of graduates with advanced degrees. The master's degree graduate may qualify for positions in colleges, secondary schools, business, industry and government. The graduate program in home economics enables students to concentrate in a subject matter area in greater depth than is possible in the undergraduate program, and an opportunity to conduct research is a part of the degree program. Students may specialize in one of five subject matter areas: design and housing, family development, food and nutrition, home economics education, and textiles and clothing.

The Department offers both thesis and non-thesis programs. The student's professional goals should determine which program to select. The thesis plan is recommended for students interested in research for teaching and research in colleges and universities. Those in the Master's degree and for continued study beyond the master's degree. The thesis program permits more intensive experience in research procedures or the opportunity for extensive creative work. The thesis may be undertaken in the Department, or in cooperation with related departments or colleges.

In addition to the general requirements of the Graduate College, degree candidates must complete specific requirements of the Department.

Master of Arts, Master of Science
For either of these two degrees, students must complete a minimum of 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 courses selected. Approximately one-third of the student's coursework is completed in departments other than home economics. The designation of the degree, M.A. or M.S., depends on the emphasis of work.

All students in the M.A. and M.S. programs are required to complete 17:290 Seminar: Home Economics Research. Those in the thesis program also must complete 17:291 Thesis.

Design and Housing
Graduate study in design and housing may be planned as a specialization program in interior design or textile design or as a more general program including a wider variety of courses. Evidence of creativity is highly desirable for creative fields such as textile and interior design. A variety of career opportunities is available to the graduate students in design and housing. These include college teaching, interior design, textile design, historic preservation, and positions in business and industry.
### Required (depending upon previous coursework)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:154</td>
<td>Interior Design: Principles and Practices II</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>17:155</td>
<td>Survey of Traditional Interiors</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>17:160</td>
<td>Textile Design: Printing and Dyeing</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>17:169</td>
<td>Family Housing</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>17:250</td>
<td>Seminar: Design and Housing</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>17:269</td>
<td>Research: Problems in Design and Housing</td>
<td>2-4 s.h.</td>
</tr>
<tr>
<td>17:290</td>
<td>Seminar: Home Economics Research</td>
<td>2 s.h.</td>
</tr>
<tr>
<td></td>
<td>One course in art history</td>
<td>3 s.h.</td>
</tr>
<tr>
<td></td>
<td>One studio course in art</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

### Family Development

The student must specialize in family development to satisfy the breadth requirement in the social sciences area. Courses such as those listed above must be taken in addition to these courses.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:212</td>
<td>Seminar: Family Dynamics</td>
<td>arr.</td>
</tr>
<tr>
<td>17:219</td>
<td>Research Problems in Family</td>
<td>arr.</td>
</tr>
<tr>
<td>17:221</td>
<td>Seminar: Home Economics in Higher Education</td>
<td>2-3 s.h.</td>
</tr>
<tr>
<td>17:290</td>
<td>Seminar: Home Economics Research</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>7P:106</td>
<td>Child Development</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>34:159</td>
<td>The Family in Various Societies</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>34:161</td>
<td>Sociology of the American Family</td>
<td>3 s.h.</td>
</tr>
<tr>
<td></td>
<td>A course in sociology</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

### Food and Nutrition

Graduate work in food and nutrition may be planned with specialization in foods or nutrition or nutrition education. Courses may be chosen in consultation with educational institutions, business, industry, and government. Applicants need background courses in foods, nutrition, general and organic chemistry, mathematics, physiology, and microbiology.

### Required

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:239</td>
<td>Research Problems in Food and Nutrition</td>
<td>2-4 s.h.</td>
</tr>
<tr>
<td>17:290</td>
<td>Seminar: Home Economics Research</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>17:291</td>
<td>Thesis</td>
<td>arr.</td>
</tr>
</tbody>
</table>

### Courses for Food Specialization (M.S.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:154</td>
<td>Experimental Food I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>17:155</td>
<td>Experimental Food II</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>17:238</td>
<td>Seminar: Food</td>
<td>2-4 s.h.</td>
</tr>
<tr>
<td>225:101</td>
<td>Biostatistics</td>
<td>2-3 s.h.</td>
</tr>
<tr>
<td>7P:143</td>
<td>Introduction to Statistical Methods</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>61:157</td>
<td>General Microbiology</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>99:120</td>
<td>The Chemistry of Biological Materials</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>99:125</td>
<td>Metabolism</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

### Courses for Nutrition Specialization (M.S.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:134</td>
<td>Experimental Food I</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

### Advanced Nutrition

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:145</td>
<td>Advanced Nutrition</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>225:101</td>
<td>Biostatistics</td>
<td>2-3 s.h.</td>
</tr>
<tr>
<td>7P:143</td>
<td>Introduction to Statistical Methods</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>99:120</td>
<td>Chemistry of Biological Materials</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>99:125</td>
<td>Metabolism</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

### Nutrition Education: Specialization in Foods and Nutrition Education (M.A.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:124</td>
<td>Nutrition Work with Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>17:145</td>
<td>Advanced Nutrition</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>7P:131</td>
<td>Educational Psychology</td>
<td>3-4 s.h.</td>
</tr>
<tr>
<td>7P:143</td>
<td>Introduction to Statistical Methods</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>99:120</td>
<td>Chemistry of Biological Materials</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

### Home Economics Education

The graduate student's program in home economics education may be planned for depth in one specialization in home economics or for breadth in the whole of home economics. This program prepares graduates for positions in educational institutions at all levels, in home economics extension service, social agencies and business. Applicants must have completed requirements for a teacher's certificate.

### Required

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:290</td>
<td>Seminar: Home Economics Research</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>7P:143</td>
<td>Introduction to Statistical Methods</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

### Textiles and Clothing

This program prepares students for careers in merchandising, textile research, teaching, extension service and communication. Plans for graduate programs need to be flexible in order to prepare students for various career opportunities available in textiles and clothing.

### Required

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:279</td>
<td>Research: Problems in Clothing</td>
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</tr>
<tr>
<td>17:290</td>
<td>Seminar: Home Economics Research</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>7P:143</td>
<td>Introduction to Statistical Methods</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

### Master of Arts in Teaching

The M.A.T. program is designed for students with an undergraduate degree in home economics who have had few or no professional education courses. The program is non-thesis and requires a minimum of 38 semester hours. Written and oral comprehensive examinations are required. Graduate courses in home economics enrich the student's background in the teaching area, and courses in education lead to a vocational home economics teacher's certificate.

Applicants must have a bachelor's degree in home economics and a minimum grade-point average of 2.7. Applicants must be admitted to the M.A.T. program in the College of Education.
Hospital and Health Administration

Program Director: Gerhard Herthan
Degree offered: M.A., Ph.D.

The Master of Arts

The Master of Arts degree program in hospital and health administration stresses the conceptual unity and generic nature of problem identification, problem-solving and the decision-making process. Courses are designed to familiarize the student with the institutional environment of contemporary hospital- and health-related organizations through exploration of administrative problems unique to the hospital and health field and methods of solving them; approaches to achieving goal-directed human behavior; and organization theory from both the macro and micro viewpoints. The interdisciplinary approach is a key element in the program. Typically, the student earns one-third of the required 60 semester hours of credit in extraparamental courses.

Designed to give the student a frame of reference, the first-year curriculum emphasizes the history and evolution of health care and health-care institutions. During the first year, and throughout the program, the student is expected to complete major written projects, and to defend his or her positions orally, through individual presentations and in group discussions.

The emphasis in the second year is on individual study toward a strengthening of the student’s understanding of how services planning and health-care administration, and expansion of his or her knowledge of research methodology and applications. Additionally, trends and developments on the international health scene are examined.

Direct involvement in administrative practice is also a key element of the program. Between the first and second years, summer assistantships give students opportunities, on a voluntary basis, to observe and participate actively in the administration of community, university and Veterans Administration hospitals, health planning agencies, health insurance companies and other health-related organizations. Arrangements with several health facilities in the University area provide opportunities for on-site inquiry and study beyond or in conjunction with coursework. Students also participate in the collection and analysis of data on actual community and manpower problems across the nation, and in recommending alternative solutions to these problems.

The program culminates in the preparation of a master's thesis. During thesis preparation, the student is in close consultation with an interdisciplinary faculty committee, works on a tutorial basis with a doctoral student and has access to all University resources, including the Computer Center.

The following is a sample M.A. program:

First Year

First Semester

Administrative Aspects of Medicine

Fundamentals of Modern Hospital and Health Economics

Statistics

Human Resources Management

Second Semester

Fundamentals of Modern Hospital and Health Administration

Principles of Hospital and Health Administration

Financial Management

Medical Sociology

Management Information Systems

Second Year

First Semester

Advanced Hospital and Health Organization and Management

Clinical Education in Hospital and Health Administration

Thesis

Issues in Health Planning

Operations Research in Business

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3 s.h.
Second Semester

Advanced Hospital and Health Organization and Management 3 s.h.
Seminar: Hospital and Health Administration 3 s.h.
Thesis 3 s.h.
Medical Jurisprudence* 3 s.h.
Group Behavior in Organizations* 3 s.h.

(*Nondepartmental courses)

This is only one of many possible program structures. Individual programs are determined by the student and his or her advisor, taking into consideration the student's educational background, present competencies, particular areas of academic interest and career goals.

Admission

Admission to the Master of Arts degree program in hospital and health administration requires a bachelor's degree from an accredited college or university. The undergraduate major may be in any field, but the applicant should have a broad background in the liberal arts and sciences, and some work in business administration.

The general admission procedures and requirements of the Graduate College pertain, except that the Department's standards are somewhat higher than the 2.5 minimum grade-point average generally required.

Applications must be submitted by April 1 for the following fall semester. Each application is reviewed by an admissions committee consisting entirely of graduate students. The committee's recommendations are subject to final approval by the faculty.

Doctor of Philosophy

The primary purpose of this program is to provide the field of hospital and health administration with scholars competent in teaching, high-level administration and research. To qualify for the degree, the candidate must have a highly developed understanding of hospital and health administration, comprehensive knowledge of related fields and competence in research and independent study, demonstrated through a series of projects culminating in the dissertation.

Throughout the program, doctoral students serve in advisory capacities with master's students on thesis investigations, community and health manpower studies and related projects.

In addition to the specific requirements of the Department, the doctoral student must satisfy the general requirements of the Graduate College.

Admission

A student with a master's degree in hospital administration or public health from an accredited university, or with an advanced degree in a related field, such as public or business administration, economics, sociology, psychology, law or political science, may seek admission to the doctoral program in hospital and health administration. Some highly qualified students are admitted to doctoral work directly after completing undergraduate study. An option available to students already in the master's degree program permits the filling of a joint program for the master's degree and the doctorate.

Admission procedures and requirements are generally the same for the Ph.D. as for the master's program.

Faculty Roster

As a complement to the faculty, associate professor Amidon and adjunct assistant professor Trueschbeck, instructor Craft, an instructor.

Courses

80:101 Fundamentals of the Modern Hospital Arr. Economic perspective on health issues having an impact on the modern hospital; focused discussion, student presentation, and seminars.
80:102 Fundamentals of Modern Hospital and Health Administration Arr. Evaluation of a broad range of health care institutions; student study and research community to determine health care needs and proper institutional changes to meet the needs identified; focused discussion, student presentations, seminars, field trip.
80:103 Principles of Hospital and Health Administration Arr. Rationing-竟争健康: means approaches to medical care; economics involving financing, organization and delivery of health services are studied and analyzed within the framework of systems derived from multidisciplinary applicability; lectures and seminars.
80:104 The Hospital in Modern Society Arr. Administrative perspective and environment of the hospital; attempts to give the student a general working knowledge of the function of the hospital and a basic understanding of the institution's role and purpose; lectures and seminars.
80:108 Administrative Aspects of Medicine 3 s.h. Survey of health systems of the United States and other selected nations; focuses on the nature of health services delivery and current issues relating to the delivery system; lectures and seminars.
80:111 Thesis: Hospital and Health Administration Arr. Original study, review and presentation of a problem area in health-care administration.
80:132 Financial Management of Health-Care Organizations 3-4 s.h. Analysis of financial management problems indigenous to health-care facilities with emphasis on current and long-range financial requirements, administrative evaluation of financial alternatives, examination of costs, budgets, cost-estimation and financial aspects of third-party payment.
80:134 Health Care in America 2 s.h. Evolution of governmental role in the health-care system, with focus on public policy-making processes with regard to medical and health-care delivery.
80:251 Seminar: Hospital and Health Administration Arr. Thirty fundamental issues in health services and medical care.
80:252 Seminar: Faculty Orientation and Behavior Arr. Practice of academic policy issues. P.D.O. research only.
80:253 Advanced Hospital and Health Organization and Management Arr. Students write and present on health-related problems evaluated in terms of methodologies, mission, and current issues, social worth to the student and potential society.
80:254 Advanced Hospital and Health Organization and Management Arr. Continuation of 80:253.
80:256 Research Hospital Administration Arr.
80:257 Research Hospital and Health Administration Arr. Individual Study Arr.
80:358 Clinical Education in Hospital Administration Arr. Internship and field placement structures for students in second year of master's study; international health services and medical care concepts the determining.
80:259 Clinical Education in Hospital and Health Administration Arr. Seminar of 80:258, with emphasis on verbal communication skills; subject matter and related exercises mutually determined by instructor and student.

Italian

See "French and Italian."
Journalism

School Director: Gordon A. Sabine
Degree offered: B.A., B.S., M.A., Ph.D. (in mass communications)

Undergraduate Programs

Wherever a journalist chooses to work, he or she will be in a vital role requiring extensive knowledge of the diversity of human experience. Competent journalists must understand themselves, their relationship to the events they report, the mechanics of their profession and the effects of their work on the reader, viewer, or listener. Preparation for a career in journalism therefore requires two kinds of education—education in journalism and education for journalism.

At Iowa, professional training in the School of Journalism builds on a solid base of liberal arts education. Journalism students take about three-fourths of their coursework outside the School, and are required to develop a second major, or, in the case of one, to ensure that each has an area of special professional competence.

The School offers undergraduate students a choice of three emphases—journalism, mass communication or communication.

All these common basic requirements:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>19:100 Communication and Communication Systems</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19:102 Legal and Ethical Foundations of Communication Systems</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19:106 Cultural and Historical Foundations of Communication Systems</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19:108 Communication Systems Theory and Research</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19:110 News-Gathering Systems</td>
<td>1 s.h.</td>
</tr>
<tr>
<td>19:120 Mass Communication Laboratory</td>
<td>1 s.h.</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
</tr>
</tbody>
</table>

(Mass Communication students may substitute an approved course of a conceptual/theoretical nature for one of the Foundations courses.)

Both the Bachelor of Arts and the Bachelor of Science degree require at least 33 semester hours of coursework in journalism.

To satisfy the second-major requirement the B.A. student may either complete a standard program in another discipline, or complete an approved concentration of 25-30 hours of related courses in several departments.

Additional requirements for the B.S. degree are either 26:106 Introduction to Philosophy of Science or 26:103 Introduction to Logic, and one of the following:

- A full B.S. in a physical or natural science; or
- A 24-semester-hour concentration in the natural or social sciences, beyond University core requirements, of which 12 semester hours in courses emphasizing natural or social science methods.

(Course selections for either of the latter two options must be approved in advance.)

Except as already noted, the B.A. and B.S. requirements are the same. General requirements for both are outlined in the College of Liberal Arts section of the Catalog.

Before beginning the first 45 semester hours of his or her baccalaureate program in journalism, the student must design a plan of study and present it for adviser approval.

Journalism Emphasis

This emphasis is concerned with the gathering, organizing and effective writing of news and other information from printed, human and environmental sources, and with the processing, packaging and display of news stories, articles and illustrations, for printed and broadcast media. This emphasis also provides for the development of the various technical skills required for work in the student's choice of media. Journalism coursework required for this emphasis:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>19:112 News Reporting and Writing</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19:114 News Processing</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>19:116 Reporting of Public Affairs</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>Approved electives</td>
<td>7 s.h.</td>
</tr>
</tbody>
</table>

Maximum journalism credit allowed toward graduation: 36 s.h.

Mass Communication Emphasis

In this emphasis, students develop and employ strategies of inquiry and information-gathering, create and distribute information packages and learn to use human and other resources in identifying and solving mass communication problems.

In the Mass Communication Laboratory, competing enterprises are organized and staffed by advanced students. Produce publications using various technologies, such as print, video, audio, and motion picture photography and multimedia. Beginning students work with specific enterprises, preparing material for publication.

Publications usually are of a documentary nature, dealing with significant topical issues. Undergraduate students and faculty members of the school compose the defined audience for these publications, providing systematic feedback to each enterprise.

In the Laboratory, students are confronted with a wide range of problems and issues important to the creation, evolution, and maintenance of mass media. They develop their own basic understanding of the issues, problems and processes involved in the complex relationships between mass communication and society. As they move from situation to situation, they also develop an understanding of their own interactions with other students, and of the satisfactions and frustrations necessary to their own intellectual and professional growth.

The special requirements for this emphasis are:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>19:122 Mass Communication Laboratory I</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>19:124 Mass Communication Laboratory II</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>19:126 Mass Communication Laboratory IV</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>Approved communication skills/laboratory electives</td>
<td>7 s.h.</td>
</tr>
</tbody>
</table>

Maximum journalism credits allowed toward graduation: 40 s.h.

Communication Emphasis

This emphasis provides a non-laboratory, theoretical/conceptual approach to the study of communication and mass communication, its requirements:

Non-technical journalism courses:

- at least 9 s.h.
- at least 7 s.h.

Maximum journalism credits allowed toward graduation: 40 s.h.
Graduate Programs

Master of Arts

The Master of Arts degree program in journalism combines professional practice in the media with an examination of the effects, responsibilities and significance of the media. It prepares stu-
dents for a wide variety of positions in communication, and for study at the doctoral level.

The degree is offered with or without thesis, with either a professional journalism or a communication and mass communica-
tion emphasis, both requiring a minimum of 30 semester hours of graduate-level coursework.

Professional Journalism Emphasis

This program is designed for individuals who want to improve their technical skills and broaden their understanding of the role and function of the profession is contemporary society, but who do not plan to go on to doctoral study.

For students with no prior academic or professional experience in communication and journalism, requirements for the M.A. in professional journalism are:

19:201 Master's Seminar 3 s.h.
19:240 News Communication Theory and Process 4 s.h.
19:243 Advanced News Processing 3 s.h.
19:251 Master's Research 3 s.h.

(With adviser approval, the student may substitute an appropri-
ate sequence of related graduate courses for 19:240-243.)

For students with academic or professional experience in communication and journalism, the M.A. in professional jour-
nalism requires:

19:201 Master's Seminar 3 s.h.
19:203 Master's Practicum 5 s.h.
19:251 Master's Research 3 s.h.
Final examination

Communication and Mass Communication Emphasis

This program focuses on communication phenomena, and par-
ticularly on theory and methodology. Graduates of this program may petition the School for admission to the School's doctoral program in mass communication. Requirements for the M.A.:

19:201 Master's Seminar 4 s.h.
19:203 Master's Practicum 5 s.h.
19:251 Master's Research 3 s.h.

Doctorate in Mass Communication

The doctoral program in mass communication is an interdisciplin-
ary program whose central objective is to develop scholars who will make significant contributions to teaching and research in communication. The background it provides is applicable in a number of fields, including university teaching, news communica-
tion, international communication and various others requiring ability to develop effective communication strategies. The pro-
gram is designed around a small core of graduate work in commu-
nication, and encourages the student to work with his or her sponsor and committee in the development of an appropriate, individualized plan of study.

Iowa Center for Communication Study

The Center encourages "out"facilities inquiry into communica-
tion problems by faculty members and by graduate and under-
graduate students, via diverse "approaches—philosophical, systems design, functional, legal, behavioral, literary. Center services include consultation, training, publication of appropriate, assistance in obtaining financial support for projects and assistance in computer use and data analysis. Another area of Center activity includes the design, development and application of simulations and games for communication instruction and re-
search.

Other Special Facilities

The School has specialized laboratories for photography, typog-
raphy, Houcking, videotaping, typing, copy preparation and print production. Many students use the newsroom of the Uni-
versity student newspaper, The Daily Iowan, as a professional laboratory. The School maintains a journalism reading room.

Faculty Roster

Professor Sabine; professor emeritus Muller; associate profes-
sors Fox, Hardt, Talbot; assistant professors Auerhoff, Bauer, Castille, Hunt, Mcheyne, Zine; instructors Amstir, Butler, Chion, Hightower, Howard, John, Self.

Courses

19:01 Media and Consumers

Critical evaluation of mass communication, newspapers, magazines, television, radio, film, multimedia, commercial records, etc.; trends and kind of criticism of these media. Offered each spring semester. Open to students not enrolled in 19:201-204.

19:100 Communication and Communication Systems

A comprehensive overview of the process and functions of communication. This course is designed to extend beyond the confines of mass media

19:110 Law and Ethical Foundations of Communication Systems

An introduction to legal and ethical problems of mass communication systems in contempo-

19:202 Languages and Traditions of Communication Systems

An introduction to the social and cultural context of communication systems in con-

19:203 Communication Theory and Process

An introduction to the social and cultural context of communication systems in con-

19:204 Advanced News Processing

An introduction to the social and cultural context of communication systems in con-

19:251 Master's Research

An introduction to the social and cultural context of communication systems in con-

19:252 Final examination
19:104 Technologies and Economic Foundations of Communication Systems 3 s.h.
19:110 Cultural and Historical Foundations of Communication Systems 3 s.h.
Communication Systems 3 s.h.
Introduction to the history and use of communication systems and as a designer of communication systems; uses historical framework to discuss social, political and cultural environments as communication phenomena, and to investigate social and economic functions of communication systems; includes study of these communication systems which serve the major institutions in society, consideration of the importance of differences or differences in transmission and communication technologies, discussion of the relationship between communication and power in society and influences of culture on communication systems.
19:112 Communication Systems Theory and Research 3 s.h.
for the study of the uses and abuses of communication "theory" and research methods in market research, advertising research, public opinion polling, political communication, persuasion and propaganda, information systems and communication; how to assess more communication research; see techniques in communication research; communication research as an aid in effective decision- and policy-making.
19:114 News-Gathering Systems 1 s.h.
Development of skills in news and information gathering through systematic approaches, including effective "sourcing" of information from a variety of printed documents, interviews and relatives, selection of news sources, training in useful questions in interviewing, taking and organizing of notes, accurate observing of news situations and translating and writing of the basic material for news publication.
Prerequisite: Reasonable typing skills.
19:115 News Reporting and Writing 3 s.h.
Reporting techniques and experience in identifying news and human interest stories, contacting these sources and "writing" news and information from them; emphasis is on clear and accurate thinking that leads to the "ring" of news stories and articles that are intelligible, comprehensive and interesting to the consumer; a variety of writing styles is employed; training in the use of news publications; legal implications of news-gathering and sources of revenue; current awareness of university and college activities, municipal and county government, schools and events. Prerequisite: 19:114.
19:116 News Processing 3 s.h.
Basic techniques of copy editing and layout writing and their legal ramifications; preparation of copy and layout material for publishing, including catalog design for printed media, particularly newspapers with some comparative understanding of other media; emphasis on the importance of manuscript in the effect of editing and understanding the news electronic systems that are being developed for the printed media. Prerequisite: 19:115.
19:119 Reporting and Public Affairs 3 s.h.
Innovative coverage of live news events in major field as representatives, political, economic, education, science, business and other social and human institutions; emphasis on investigation of organizational activities and use of field study and other practical and behavioral techniques. Prerequisites: 19:112, 19:143.
19:120 World Report 2-3 s.h.
Expanded reporting and writing in selected subject areas, including critical and effecive writing in English. Consent of instructor required. Prerequisite: 19:119.
19:120 Mass Communication Laboratory I 1 s.h.
19:122 Mass Communication Laboratory II 1 s.h.
19:123 Mass Communication Laboratory III 1 s.h.
19:124 Mass Communication Laboratory IV 1 s.h.
19:135 Advertising Communications 3 s.h.
19:135 Advertising Communications 3 s.h.
19:135 Advertising Communications 3 s.h.
19:136 Radio Television News 3 s.h.
19:137 Sports Reporting and Film 3 s.h.
19:139 Methods of Journalism 3 s.h.
19:140 News Reporting and Writing 3 s.h.
19:141 News-Gathering Systems 1 s.h.
19:143 News Processing 3 s.h.
19:144 Current Magazine Practice 3 s.h.
19:145 Photojournalism 3 s.h.
19:147 Free Lance Workshop 3 s.h.
19:149 Photojournalism 3 s.h.
19:150 Communication and Public Relations 3-4 s.h.
19:151 Communication and Public Relations 3-4 s.h.
19:152 Comparative Communication Systems 3 s.h.
19:153 Comparative Communication Systems 3 s.h.
19:154 Communication and Individual Community and National Development 3 s.h.
19:155 Communication and Individual Community and National Development 3 s.h.
offers a theory of individual, community and national development which is large- scale, with an emphasis on cultural development and cultural change, and in which communication is viewed as the central strategy for achieving developmental ends more efficiently. It explores theories of development and modernization examined to determine their possible interactive effects, proposed a systems view of man in his environmental need to gain cross-cultural degrees of predictability and control, and a three-part framework for the analysis of cultural systems as it is used to select the primary sources for increasing predictability and control.
19:156 Introduction to Typographic 3 s.h.
19:157 Introduction to Typographic 3 s.h.
Library Science

Director of School: Frederick Wexman
Degree offered: M.A.

Undergraduate Study

Although 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).

The Master of Arts Program

The Library School's Master of Arts degree program provides professional preparation for careers in all types of libraries and is accredited by the American Library Association. The School also offers a non-degree graduate program for certification in school librarianship. In graduate studies, positions, in approximately equal numbers, in public, school, and academic libraries, serving in such roles as administrators, bibliographers, catalogers, reference specialists, or children's librarians.

The Master of Arts degree in library science requires 31 semester hours of graduate credit with a minimum grade-point average of 2.5. In addition, the student must pass a written comprehensive examination. The program consists of a small core of required courses basic to all areas of librarianship, additional required courses in a type of library and in bibliography, and electives. The plan of study should be related to developing special competencies in a particular field of librarianship.

Basic Plan of Study

Core courses (required of all M.A. candidates) 9 s.h.
21151 Introduction 1
21152 Cataloging and Classification
21153 Selection of Library Materials

Type-of-library courses (one required) 3 s.h.
21231 The Public Library
21232 The College and University Library
21233 School Media/Curriculum

Bibliography course (one required) 3 s.h.
21241 Bibliography of the Humanities
21242 Bibliography of the Social Sciences
21244 Bibliography of the Sciences

Electives 18 s.h.

Students are expected to take their elective hours in library science courses. However, when a student has had extensive undergraduate coursework in library science, when career objectives so indicate, and with the director's consent, 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.

With the director's approval, a student with a strong background in library science may elect to write a thesis, for which six semester hours of credit may be earned. However, most students are advised to undertake the non-thesis program.

The program normally requires two semesters and one summer of resident study, or, in the case of students attending summer only, a minimum of four summer sessions.

Public Library Work

A major concern of public librarians is to design innovative service programs to reach those segments of the population not served, as well as to provide a full range of services to all members of the community. Management skills are often needed in these positions.

Required courses:
Core courses
Bibliography course
21231 The Public Library

Suggested electives:
21235 Library Services to Adults
21232 Multi-Media Concepts in Libraries
21246 Introduction to Information Science
21251 Advanced Reference
21252 Advanced Cataloging
21253 Problems in Library Management
21282 Practicum in Libraries

Additional bibliography courses
Courses relating to services to children and young adults
(2112, 21126, 21193, 21234)

School Library Work

The school media center makes a wide range of print and audiovisual materials accessible to students and teachers. The work of the media specialist includes such activities as providing instruction to students in the use of media, consulting with teachers about the use of media in the teaching program, producing new materials, offering reading guidance and providing reference service.

State certification is required for a career as a librarian in elementary and secondary schools.

Required courses:
Core courses
Bibliography course
21233 School Media/Curriculum

Suggested electives:
21235 Children's Literature
21234 History of Children's Books

In all of these includes service of current programs and presentation training in processes, storage, retrieval of information by manual, mechanical, and electronic means.

21251 Advanced Reference

Subject approach to major reference sources, especially in fields of law, medicine,
Linguistics

Department Chairman: Robert Hovland

Departmental oath: B.A., M.A., Ph.D. in Anthropology and Linguistics

Linguistics is the study of language—"for the immediate purpose of mastering the use of a particular language in speaking, reading, or writing, but for the purpose of understanding the phenomena of human language. Linguists ask and attempt to answer such fundamental questions about language as: "How can we account for the fact that native speakers of a given language continually utter sentences which they have never before produced and are able to understand sentences they have never heard before?" There is probably not a sentence in Lincoln's Gettysburg Address, for example, that had ever been uttered before; yet we may assume that Lincoln's audience understood his meaning. In short, the linguist's main goal is to construct a model of the native speaker's "linguistic competence," the basis of his "creative use" of language, which is primarily—and perhaps uniquely—a human property. All the other goals of linguistic science—for example, accounting for the child's acquisition of his or her native language, explaining how language changes in the process of their transmission from one generation to the next, or characterizing regional and social variation in language, to mention this main one.

Since language is uniquely human, and since the use of language is central to almost everything we do, the findings of linguistics bear upon other fields of study which deal with human behavior: anthropology, sociology, psychology, literature, the teaching of languages, the diagnosis and treatment of speech disorders. Moreover, the formal properties of grammar (that is, of models of "linguistic competence") are of interest to mathematicians and computer scientists.

Students majoring in other disciplines concerned with language or with symbolic systems (for example, modern or classical languages and literatures, speech science, anthropology, psychology, philosophy or mathematics) are encouraged to complement the study of their major subject—whether at the graduate or the undergraduate level—with relevant courses in linguistics.

Employment opportunities for linguists with various degrees of training exist not only in the academic profession but also in agencies which deal with foreign language training, such as the Department of State, the Defense Language Institute, programs in teaching English as a foreign language, a number of private corporations and some unstructured groups such as missionary organizations.

Undergraduate Program

The undergraduate program is designed to provide a foundation in linguistic theory, training in the scientific analysis of languages and proficiency in a language other than the one native to the student. Specifically, the program includes work in general linguistics, phonetics, grammatical and phonological analysis, study of the history or structure of a particular language (courses in this area are currently available for several languages, including English, the Romance languages, Russian, German and Chinese) and other courses in linguistics to be selected in consultation with the student's advisor. In addition to his or her work in linguistics proper, the undergraduate student's program includes elementary courses in psychology, anthropology, language and culture. The total program includes ineffective courses in one more fields related to linguistics. The amount of language study included in the student's program depends upon his or her pre-university language training. During the second year, the student undertakes an independent research project under the direction of a member of the Linguistics faculty.

M.A. Program

The Master of Arts program in linguistics provides graduate training in general linguistics to students from a variety of academic backgrounds who have an interest in languages and the theory of language. The program is adaptable to the needs of students who plan to pursue further graduate study in linguistics or related fields, and students who wish to complement their undergraduate training in related fields (e.g., language teaching or anthropology) with specialized training in linguistics. Graduate 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 syntax or syntax, two courses in the general area of historical and comparative linguistics, and other courses in linguistics and related fields, to a total of 27 semesters hours of coursework. A thesis is also required.

Ph.D. in Cultural Anthropology and Linguistics

The Ph.D. in cultural anthropology and linguistics prepares the student for professional teaching and research in the linguistic
and nonlinguistic 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. It is offered 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 anthropology or in linguistics, or to 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 sequence of courses in linguistics and in anthropology (see linguistics, courses in general linguistics, theory, phonetics, mathematical analysis, psycholinguistic analysis, and historical-comparative linguistics); in anthropology, courses in archeological history, theory or methods, and nutrition, sociology, and a combination of anthropological methods and sociolinguistic theory.

Beyond this basic training, the candidate for the Ph.D. in cultural anthropology and linguistics may concentrate in one of the two areas with further work or may achieve a balance between the two. At the completion of the core program, each student's achievement in both areas 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 taken an undergraduate major in either anthropology or linguistics. However, unless the student has had the equivalent of the introductory courses in linguistics and anthropology (103/200 Introduction to Linguistics and 113/101 General Anthropology), these deficiencies must be made up.

The student may take the M.A. degree in either anthropology or linguistics before proceeding to the joint Ph.D. Program. 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 as a second language combines 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 mastery of English and other American literature. Normally the holder of such a degree would follow a career 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 other Indo-European languages. The student is also expected to take appropriate courses in a related area or related areas—for example, history, philosophy, etc.

The linguistics area of the program is planned in consultation with the student's adviser. It is expected to include work in syntax, phonology, and dialectology. The English linguistics area includes Old English, Middle English, the structure of English, the history of the English language and the teaching of English as a second language. An important part of the program is a sequence of directed research—usually in the last year of course-work—and 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 Bowker, Chaucer and Shakespeare, as well as a literary period of the student's choice. Course work in traditional expectations, the student of English linguistics does not have to be a medieval—students in this program have concentrated in literary studies ranging from the Old English period to the 20th 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 older Indo-European languages.

The program of the doctoral student in English linguistics is monitored by work in such areas as medieval history, the philology 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 selected. The oral examination may range over all these areas.

The dissertation must be on a 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 audiorama laboratory, consisting of a sound spectrograph, a studio-type tape recorder and an auditorium chamber. There is also a remote type-pen writer terminal connected with the IBM 360/65 computer at the University Computer Center.

The Faculty

Although the Department of Linguistics is new (established in September, 1970), it has a growing reputation not only in the Midwest but nationally. Members of the faculty have achieved national recognition in the areas of syntax, American Indian languages and the history of the English language. The faculty of Linguistics at The University of Iowa is well known, since linguistics was taught in the Department of English at The University of Iowa before the "Chair 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 30 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 through daily "top sessions" between students and faculty members.
Courses

For Undergraduates and Graduates

103.10 English for Foreign Students

103.15 Language and Culture

103.20 Introduction to Linguistics

103.25 French

103.30 Introduction to Syncretic Analysis

103.50 History of Linguistics

103.55 Comparative Linguistics

103.60 Introduction to Phonetic Theory

103.65 Introduction to Historical Linguistics

103.70 Introduction to Phonology

Introduction to English

Introduction to Language and Communication

Methods and research in the study of interaction between language and communication theory. Same as Speech 30.105.

Linguistics

Variety of topics in general Linguistics. Same as English 8.163.

Introduction to Language and Communication

Methods and research in the study of interaction between language and communication theory. Same as Speech 30.105.

Linguistics, Education and Society

Sociologically-oriented attitudes to language use; development of prescriptivism. Linguistic inclusion in societal status, concepts of a "standard" language and dialect, class that verbal deprivation is a consequence of social-economic deprivation. No prerequisites. Same as English 8.159.

Articulatory and Acoustic Phonetics

Articulatory and acoustic phonetic theory and phonetic transcription system.

Introduction to Syncretic Analysis

An examination of problems in morphosyntactic analysis in the framework of generative theory. Prerequisites: 103.15 or 103.20; 103.100; 103.110.

Introduction to Language and Data Processing I

Writing computer programs to process language data, to develop linguistics or anthropological, or prior knowledge of computers or programming assumed. Course focuses on analyzing problems, conceptualizing the problem and writing a program to solve them individually. Same as English 8.186.

Introduction to Language and Data Processing II

Same as English 8.186.

Linguistics

Comparative Linguistics

Principles of linguistic change, comparative method and genetic classification of languages, communication and language origins. Same as English 8.143.

Introduction to Phonetic Theory

Prerequisites: 103.100 or equivalent.

Introduction to Syncretic Theory

Principles of linguistic change, comparative method and genetic classification of languages, internal communication and language origins. Same as English 8.143.

Introduction to Synthetic Theory

Prerequisites: 103.110.

Introduction to Phonological Theory

Basic issues in generative phonological theory. Prerequisite: 103.110.

Introduction to Bilingualism

Same as Speech 103.212.

Religious Linguistics

Comparative study of religious language, same as Spanish 33.120.

History of the English Language

Development of phonological and general structure of English from Old English to Middle English; lexical differentiation in English. Same as English 8.118. Prerequisites: 103.100 or equivalent.

Applied Linguistics

Application of linguistics to real world problems of communication and education. Same as Speech 103.110.

Introduction to Modern English Grammar

Views of great grammatical traditions in relation to contemporary structural and transformational approaches to grammar of modern English. Same as Speech 8.118.

German Phonology

Sociolinguistic study of sound systems of German language; introduction to theories of German morphology and syntax; basic linguistic course. Same as German 13.101.

Introduction to Chinese Linguistics

Same as East Asian Languages and Literatures 31.100; no knowledge of Chinese required.

Linguistic Analysis

Philosophy and development of ordinary language philosophy, presuppositional con- cept of intention. Same as Philosophy 31.100.

Archaeological Linguistics

Structure of spoken language: emphasis on the techniques for collecting and analyzing linguistic data. Historical and geographical linguistics, meaning inflections of language. Prerequisites: 103.110, graduate standing or consent of instructor. Same as Anthropology 13.171.

Psycholinguistics

Survey of contemporary approaches to language behavior. Emphasis primarily for undergraduates and professionals. Same as Psychology 13.171.

Language Teaching and Linguistic Behavior

Theoretical and practical aspects of foreign language teaching in connection with child language, second-language learning, teaching a foreign class in a college of "American" culture, introduced major European present-day foreign languages. Prerequisites: 103.100 or equivalent.

Social and Cognitive Psychology of Language

Survey of the major theoretical approaches in the sociolinguistic study of lan- guage and thought. Same as Psychology 13.171.

Psycholinguistics

Principles of the psychology of language. No prerequisites.

History of Linguistics

Topics in history of linguistic theory.

Linguistic Structures

General linguistics, historical and structural, phonological aspects of related language families. Linguistic interests considered on an individual basis. Usually offered in year.

Advanced Syntactic Theory

Current developments in syntactic analysis of the nature of generative syntax, aspects of generative syntax. Prerequisite: 103.121; corequisite: 234.121.

Advanced Syntactic Analysis

Advanced analysis of syntactic data, research on the nature of language, the nature of language, aspects of generative syntax. Prerequisite: 103.121; corequisite: 234.121.

Philosophy of Language

Introduction to logic and language analysis. Prerequisites: 103.110 or equivalent.

History of Linguistics

Topics in history of linguistic theory.

Linguistics

Critical examination of the nature of linguistic organization from the viewpoint of logical analysis. Prerequisites: 103.111; corequisites: 234.121, 234.122.

Philosophy of Language

Introduction to logic and language analysis. Prerequisites: 103.110 or equivalent.

Introduction toZipfian Language Analysis

Prerequisite: 103.212; corequisite: 234.121.

Philosophy of Language

Introduction to logic and language analysis. Prerequisites: 103.110 or equivalent.

Primary for Graduates

103.200 Procedure in Linguistics

Linguistics, methods for finishing graduate study in linguistics and for graduate students in other disciplines in which more than fifteen familiarity with English is a must. Same as Speech 33.323.

103.205 History of Linguistics

Linguistics, methods for finishing graduate study in linguistics and for graduate students in other disciplines in which more than fifteen familiarity with English is a must. Same as Speech 33.323.
Division of Mathematical Sciences

Degree offered: B.A., B.S., M.S., Ph.D.

Undergraduate Program

The Division has a comprehensive undergraduate program in which students who seek a major in mathematical sciences may plan studies which will lead in (and may include) advanced work in one or more departments of the Division.

The Division offers two majors. One is a general major in mathematical sciences, in which the student may choose courses from any of the three departments in the Division of Mathematical Sciences. This major 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 is a major specializing in computer science. This program requires both substantial work in computer science and an approved elective program.

Students may earn a B.A. by meeting the requirements for either of these two majors, as outlined below. Alternatively, a student may earn a B.S. by meeting the requirements for either of these two majors and, in addition, completing two additional one-semester courses (each having at least 2 s.h. credit) in the Division.

In addition to the requirements listed here, each student 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

The student must take at least one year of calculus (either 22M:25 and 22M:26 Calculus I, II, or 22M:33 and 22M:36 Engineering Mathematics I, II) 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 C#BOL
Introduction to Computing with Fortran

Computing with P/L

Basic Mathematical Techniques

Mathematical Techniques I, II

Matrix Algebra

Quantitative Methods I

Fundamentals of College Mathematics I, II

Mathematics for the Biological Sciences

Calculus for the Biological Sciences

Elementary Functions

Calculus I, II

Computational Techniques of Calculus and Linear Algebra

Introduction to Statistical Methods

Except for students seeking a secondary teaching certificate, the seven courses must include two of these:

Advanced Computer Organization and Architecture

Advanced Programming Concepts

Introduction to Computational Theory

Artificial Intelligence I

Introduction to Ordinary Differential Equations

Complex Variables

Numerical Analysis: Nonlinear Equations and Approximation Theory

Differential Equations and Linear Algebra

Foundations of Mathematics I, II

Elementary Topology I, II

Introduction to Analysis I, II

Abstract Algebra I, II

Elementary Theoretical Mechanics I, II

Probability and Statistics for Engineering and Physical Sciences

Introduction to Probability

Engineering Statistics

Introduction to Mathematical Statistics I, II

Numerical Analysis for Actuaries

Graduation

Students who complete the requirements for a secondary teaching certificate may take any two 100-level courses among their seven courses in mathematics.

Students should not change from the calculus sequence (22M:25-28 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; rather, it is expected that each student will meet with his or her adviser 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 22M:27 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:163 Foundations of Mathematics I, and it should include at least one semester's work in statistics and probability.

Additional work, in particular the required 100-level course, should be taken in whatever area of mathematics 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 Computational with P/L/I and courses in numerical analysis, applied statistics and operations research.

Actuarial Science


Normally a student would not complete all of these courses during the undergraduate years. Instead he or she would be advised to take a more general program and in consider completing the actuarial courses as part of a graduate program. Students of actuarial science are also advised to take at least one course in computer science and to consider a substantial program of courses from among those offered by the College of Business Administration.

Applied Mathematics

All students interested in applied mathematics should take the sequence 22M:25, 26, 28 Calculus I-III and 22M:27 Introduction to Linear Algebra or the sequence 22M:35-36 Engineering Mathematics I-IV.

Mathematical Sciences

22M:16 Introduction to Analysis II, 22M:126 Elementary Theory of Numbers and 22M:150 Matrix Theory. 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 ideas of probability and statistics (it is courses 22S:153, 154 Introduction to Mathematical Statistics I, II or 22S:130 Probability and Statistics are appropriate). Students who plan to do graduate work in applied mathematics should take 22M:115 Introduction to Analysis I.

Mathematics Education

For the requirements for teacher certification, see "College of Education." The following program is suggested for students having an interest in mathematics education:

- The sequence 22M:25, 26, 28 Calculus I-III and 22M:27 Introduction to Linear Algebra;
- 22M:50 Elements of Group Theory (before Education 75:125 Methods: Mathematics) and 22M:70 Euclidean Plane Geometry;
- In the 100-level courses, the student should strive for exposure to the following areas (broadly preferred over depth): 22M:120, 121 Abstract Algebra I, II, 22M:103, 104 Foundations of Mathematics I, II, 22M:116 Introduction to Analysis I, II and 22M:119, 121 Elementary Topology I, II.

In addition, it is recommended that the student take at least two semesters of course 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, 22S:135, 154 Introduction to Mathematical Statistics I, II and 22S:24 Introduction to Probability.

Pure Mathematics

Students in this area of mathematics should take two of the sequences 22M:120, 121 Abstract Algebra I, II, 22M:115, 116 Introduction to Analysis I, II, 22M:103, 104 Foundations of Mathematics I, II and 22M:119, 121 Elementary Topology I, II. The student should also take at least two semesters of coursework outside this area, for example, 22C:7 Introduction to Computing with FORTRAN, 22C:17 Computing with PL/I, 22M:100 Introduction to Ordinary Differential Equations, 22M:118 Complex Variables, 22S:135, 154 Introduction to Mathematical Statistics I, II or 22S:24 Introduction to Probability.

Probability and Statistics

The basis for this program is the calculus sequence 22S:25, 26, 28 Calculus I-III, and 22M:27 Introduction to Linear Algebra or 22M:35, 38 Engineering Mathematics I-IV, together with one of the three sequences: 22S:123, 154 Introduction to Mathematical Statistics I, II, 22S:164, 165 Introduction to Probability I, II, or 22S:39 Probability and Statistics for Engineering and Physical Sciences and 22S:132 Engineering Statistics. Students should also select one or two courses in computer science from 22C:7 Introduction to Computing with FORTRAN, 22C:17 Computing with PL/I or 22C:18 Assembly Language Programming and use one or two courses in mathematical analysis from 22M:55 Functional Properties of Spaces and Functions, 22M:105 Analysis for Applications and 22M:115 Introduction to Analysis I. Substantial work in one of the biological, social, physical or engineering sciences is also highly recommended.


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:

Mathematics Requirements

22M:25 Calculus I 4 s.h.
22M:26 Calculus II 4 s.h.
22M:27 Introduction to Linear Algebra 4 s.h.
(Students interested in taking 22C:55 Numerical Methods in Computing should take 22M:37. All students are urged to take both 22M:26 and 22M:27.)

Computer Science Core Requirements

22C:7 Introduction to Computing with FORTRAN 3 s.h.
22C:17 Computing with PL/I 3 s.h.
22C:18 Assembly Language Programming 3 s.h.
22C:21 List Processors and Data Structures 3 s.h.
22C:23 Programming Language Concepts 3 s.h.
22C:27 Introduction to System Hardware and Software 3 s.h.
and 22C:50 Discrete Structures 3 s.h.
or 22C:55 Numerical Methods in Computing 3 s.h.
(All students are urged to take both 22C:30 and 22C:55. Students who plan to go on to graduate work are especially urged to take 22C:30 and either 22C:55 or 22M:170.)

To receive a B.S. degree, the student must take two additional courses (each having at least 2 s.h. credit) in the Division of Mathematical Sciences.

In addition, the student pursuing this major for either a B.A. or B.S. must complete an approved elective program. The Handbook for Computer Science Undergraduates, available from the Department of Computer Science, includes suggestions for elective programs, information concerning credit by examination for the computer science core requirements and other information.
The student's advisor maintains an academic record sheet (discussed in the Handbook) containing the approved elective program.

Applied Mathematical Science

Committee Chairman: William F. Aebers Degree offered: Ph.D.

Creative activities of an applied mathematical scientist include the formulation of scientific concepts and problems in mathematical terms; the solution of these 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 subjected to systematic mathematical treatment. These efforts, in turn, lead to the generation of new mathematical ideas and theories, as a result of abstraction or generalization.

Opportunities for careers include faculty positions in colleges and universities, research positions in industrial and government laboratories, professional consulting positions and software computer consulting. The mathematical modeling learned by the student is useful in a wide variety of situations in this technological world.

Applied mathematical science at Iowa is an autonomous, broadly-based interdisciplinary program leading to the Doctor of Philosophy degree. The program seeks to help the student achieve a basic command of advanced mathematics, at least 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.

Each student will have a committee of three or more faculty members to guide and carefully supervise his or her progress. The individual plan of study will be specifically developed by incorporating the student's background in the appropriate science(s), advanced mathematics and applied mathematical science with the student's background, interests and goals.

A major objective of the program is to have development of each student's dissertation follow the full cycle of research in applied mathematical science. Guided by the supervising committee, each student is expected to recognize a significant problem within his or her science. Then 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. Student should either a bachelor's or a master's degree. Applicants 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. All applicants must satisfy the general requirements of the Graduate College.

Fellowships, graduate tuition scholarships and some research assistantships are available to qualified applicants. Applications for these appointments must be received before March 1. For application forms and further information about the academic program, write to the Chairman, Program in Applied Mathematical Science, Graduate College, The University of Iowa, Iowa City, Iowa 52242.

Computer Science

Department Chairman: Donald L. Epkey Degrees offered: B.S., M.S., M.Eng. Ph.D.

Undergraduate Program

See "Division of Mathematical Sciences".

Graduate Programs

To provide the broadest possible background for its students and to take advantage of courses offered 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 the particular needs of a student. Generally, however, a certain core of courses should be taken by any candidate for an advanced degree in this field. If a student is concerned about a specific subject area in which computer science is a necessity but not a major part of his or her goal, then the student may be better served by earning a degree in that other area, with a concentration of courses in computer science. For instance, the Computer Science Department cooperates with the Program in Applied Mathematical Science in developing interdisciplinary doctoral programs.

Although the plan of study of a well advanced degree student is individually arranged to fit his or her needs, each student will be expected to study in the area of programming, computer systems and computing theory. The requirements for the M.S. and Ph.D. degrees are outlined below, and specific details including grade-point requirements, comprehensive examination information, student review policies and complete course descriptions are given in the departmental Graduate Student's Handbook, which is available at the Mathematical Sciences Division Office.

The M.S. graduate will find careers as programmers or systems 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

Adviser and student develop a plan of study which will ensure that the student achieves a proficiency equivalent to that which can be gained by taking the following courses:

22C:122 Advanced Computer Organization and Architecture 3 s.h.
22C:123 Advanced Programming Language Concepts 3 s.h.
22C:135 Introduction to Computation Theory 3 s.h.
22C:193 Programming Laboratory 2 s.h.

Other courses selected from 22C:116, 118, 127, 145, 199 or any 300-level course 6 s.h.

Mathematical and statistics courses 6 s.h.

Additional courses selected by the student with the approval of the adviser 7 s.h.

30 s.h.

Recommended mathematics, statistics and additional courses depend upon the student's career objectives. The student who in-
tends to pursue applied computer science might profitably elect
courses from: 22M:130 Matrix Theory, 22M:170 Numerical
Algebra, 22M:185, 154 Introduction to Mathematical Statistics I
and II, 22S:158 Design and Analysis of Experiments and cour-
ess in business administration or industrial engineering. The stu-
dent who intends to seek a Ph.D. degree might well select
Any M.S. candidate may elect to write a thesis, and with the
advisor’s consent may apply up to six semester hours of thesis
credit toward the total required for the M.S. degree. The mini-
mum number of semester hours for the M.S. degree in comput-
er science with or without thesis is 30.

Comprehensive Examination
The candidate for the M.S. degree must successfully complete a
set of written comprehensive examinations as described below.
The exams may require or the student may request an oral
review of the comprehensive examination. All M.S. candidates
must pass both parts of the examination, and both parts must be
taken during the same semester.

Part I: Fundamental Concepts
A. Programming (two hours)
B. Computer Systems and Hardware (two hours)
C. Computation Theory (two hours)

Part II: Specialty Area
The student must pass an examination in one of the specialty
areas listed below. Each is a two-hour written exam, except F,
which lasts for 3 hours, and G which is an oral exam.

A. Advanced Programming
B. Advanced Computer Systems and Hardware
C. Advanced Computation and Automata Theory
D. Artificial Intelligence
E. Matrix Theory and Numerical Analysis
F. Any one of the standard master’s examinations offered by
   the Mathematics or Statistics departments.
G. Missouri thesis defense

The student should consult the Graduate Student’s Handbook
for further information.

Thesis
If the student elects to write a thesis, it must be a contribution
of at least moderate importance to computer science. The thesis
may be in any area deemed acceptable by the thesis committee.
An oral defense of the thesis will be required and is taken as
Part II of the comprehensive examination.

Admission
The student seeking admission to the M.S. program in computer
science is subject to the general admission requirements of the
Graduate College (see "Graduate College"). It is strongly rec-
ommended that the applicant have a B.A. or B.S. in computer
sciences, mathematics, engineering or physical science. A stu-
dent whose undergraduate program does not include equivalents
of the courses listed in the Computer Science specialty option of
the Division of Mathematical Sciences will be expected to com-
plete these courses prior to admission to graduate courses, for
they are prerequisites.

Doctor of Philosophy
Doctoral students are expected to complete about 90 semester
hours of graduate work, including a thesis. The student need not
have a master’s degree when beginning the Ph.D. program, and
need not acquire one. Usually, however, the Ph.D. student ac-
quires a master’s degree either in computer science or in some
other mathematical or physical science. Every Ph.D. student in
computer science is expected to be knowledgeable in the follow-
ing four categories:

Programming concepts, including programming, programming
languages, applications programming, simulation, artificial intel-
ligence and numerical analysis;
Theory of computation, including automata theory, computa-
ability and formal languages;
Mathematical foundations, including set theory, algebra,
analysis, logic and graph theory; and
Computer systems, including operating systems, computer ar-
chitecture and 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 any special needs,
every student is expected to complete approximately half of the
coursetwork in the first two categories above. Finally, each stu-
dent must complete two semester hours of 22C:193 Program-
making Laboratory.
The student must complete, with grades of A or B, three
courses in each of two areas. At least one of the three courses
in each area must be at the 200 level.

One area must be selected from:
   Algebra
   Analysis
   Logic and set theory
   Statistics and probability
   Numerical analysis

The second area may be selected from the above, or from:
Electrical engineering
Operations research
Business administration
Linguistics

Other related area approved by the Department
If the student selects statistics and probability as one of the
areas, the advanced course may be chosen at the 600 level.

Comprehensive Examination
A student is admitted to candidacy for the Ph.D. degree in com-
puter science only after completing the comprehensive examina-
tion. In addition, he or she must be recommended by a member
of the computer science faculty. The comprehensive examina-
tion will normally be taken only when the student nears comple-
tion of coursework as required by the plan of study. There are
three three-hour written examinations, which may be followed
by an oral review:

Part I. On all aspects of programming and programming lan-
guages;
Part II. On the principles of computer architecture and operating systems; and
Part III. On the theoretical aspects of computer science, including automata theory, computability and formal languages.
All examinations are described in the Graduate Student's Handbook.

Thesis
After demonstrating competency in each of the three required areas of computer science and mastering the required G.P.A., the student will prepare a written research proposal which will be defended in an oral examination administered by the student's committee. The student must demonstrate expertise in the area of the proposed research and must also justify the originality and significance of the proposed contribution. Upon completion of the thesis, an oral defense will be required.

Admission
Admission to candidacy for the Ph.D. degree is granted only upon the recommendation of a faculty sponsor and the approval of the departmental Graduate Committee. The department has a highly selective admission policy and normally considers only students with a grade-point average of at least 3.0.

Graduate Service Course Sequence
Comprehension of the use of a digital computer is prerequisite to advanced study and research in many disciplines. Courses recommended for graduate study in many disciplines are CSE-101 Introduction to Programming with FORTRAN and CSE-117 Computing with PL/1. Such courses as CSE-118 Assembly Language Programming, CSE-131 List Processing and Data Structures, CSE-114 Computer Applications to Individual Instruction may also be useful. The department will not certify "core" competence in computer science; the student's major department is expected to verify such proficiency.

Faculty Roster
Professor Epley, Fleck, Mokrushov, Weeg, associate professor Doby; assistant professors Atten, Brat, Ciochick, Tows-

Reading, research or programming projects in computer science not available in program areas.

For Undergraduates and Graduates
CSE-102 Introduction to Computing with FORTRAN 3 a.h. Designed for students with a basic knowledge of FOR-

CSE-103 Computer Applications to Individual Instruction 3 a.h. Designed for students with knowledge of various operating systems. Emphasis on the use of the computer to solve practical problems. The course is offered in the fall and winter quarters.

CSE-119 Operating Systems Principles 3 a.h. Functions and properties of operating system principles, including system processes, files and file manipulation, operating system interfaces, protection, security, and the control of information flow. Prerequisite: CSE-111.

CSE-121 Programming with PL/1 3 a.h. Designed to provide the necessary background in application-oriented knowledge of PL/1. The student will be introduced to basic concepts of the language, and will be required to perform computer experiments and exercises. Prerequisite: CSE-101.

CSE-131 List Processing and Data Structures 3 a.h. Basic hardware components: gates, registers and decoders, memory, system analysis; Boolean algebra; introduction to computer hardware; computer architecture; machine language and assembly language programming; digital circuit design techniques; introduction to programming with FORTRAN.

CSE-171 Computing with PL/1 3 a.h. Designed to provide the necessary background in application-oriented knowledge of PL/1. The student will be introduced to basic concepts of the language, and will be required to perform computer experiments and exercises. Prerequisite: CSE-101.

CSE-181 Assembly Language Programming 3 a.h. Representation of data and instructions, CPU organization, addressing, machineäh-

CSE-182 Programming Language Concepts 3 a.h. System of programming languages, programming language structures (MAC, languages, procedures, subroutines), data types, definitions and data structure libraries; control structures; operators and expressions including pattern matching; re-

CSE-183 Discrete Structures 3 a.h. Sets, relations, functions, equations and congruence relations, permutations and combinations; algebraic structures, sets, groups, rings, homomorphism; switching theory; Boolean algebra, propositional logic, well-formed formulas, algebraic normal forms, graph theory, graph and tree structures Prerequisites: CSE-104 or CSE-105.

CSE-184 Numerical Methods in Computing 3 a.h. Numerical solution of polynomial and general algebraic equations; numerical solu-

CSE-177 Computing with PL/1 3 a.h. Designed to provide the necessary background in application-oriented knowledge of PL/1. The student will be introduced to basic concepts of the language, and will be required to perform computer experiments and exercises. Prerequisite: CSE-101.

CSE-117 Computing with PL/1 3 a.h. Designed to provide the necessary background in application-oriented knowledge of PL/1. The student will be introduced to basic concepts of the language, and will be required to perform computer experiments and exercises. Prerequisite: CSE-101.

CSE-118 Systems Programming 3 a.h. Project in analysis, design and implementation of systems software; emphasis on the operation of the systems programming organization concept, implementation, and maintenance of systems programming languages and other design aids. Prerequisite: CSE-111.
Graduate Program

Master's Program

The Department offers the M.S. degree without thesis and the Master of Arts in Teaching (M.A.T.). 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. The programs seek 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.

Master of Science

Program I (designed for secondary school teachers)

Required Courses
Two from 22M:115-116 Introduction to Analysis I-II and 22M:210-211 Analysis I-II, but 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, but including either 22M:121 or 22M:206; and two in mathematics education.

Course Distribution
A minimum of 30 semester hours of graduate credit, including at least 24 semester hours in these divisions of Mathematical Sciences courses:

Any course in the Department of Mathematics numbered 100 or above, except 22M:105 Analysis for Applications;
Either 22C:132 Advanced Computer Organization and Architecture, 22C:133 Advanced Programming Language Concepts, 23C:155 Introduction to Computer Science Theory, 22C:145 Artificial Intelligence I, 22C:199 Topics in Finite Automata Theory, or any 300-level course in computer science; and
Either 325:125-126 Introduction to Mathematical Statistics I-II, 225:164-165 Introduction to Probability I-II, 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 (designed for prospective doctoral students)

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; and
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 Analysis for Applications;
Any of the following courses in the Department of Computer Science:
22C:122 Advanced Computer Organization and Architecture
22C:133 Advanced Programming Language Concepts
22C:135 Introduction to Computer Science Theory
22C:145 Artificial Intelligence I
22C:199 Topics in Finite Automata Theory or any 300-level course;
Any of the following courses in the Department of Statistics:
22B:153-154 Introduction to Mathematical Statistics I-II
22D:164-165 Introduction to Probability I-II or a course which has any of these as a prerequisite.

Comprehensive Examination

Two three-hour examinations over the required courses.

With the permission of the graduate committee, a candidate may substitute an appropriate part of the Ph.D. comprehensive examination for part of the master's examination.

Program III (non-departmental students enrolling in a Ph.D. in another area)

Required Courses:
None.

Course Distribution:
Same as 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; and
Successful completion of comprehensive Ph.D. examination in chosen area.

A student in Program III will be assigned a mathematics advisor who will work with the student and the student's advisor to his or her area outside the Division to establish an appropriate curriculum for the master's degree in mathematics.

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 mathematicians; candidate also examined on knowledge of general education;
Course in either American government or American history also required for Iowa certification; may be graduate course.

General Information
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 an undergraduate major in the Division of Mathematical Sciences. A student whose preparation does not meet this requirement may be required to take certain additional courses to cover the deficiency.
It is expected that candidates for the Master of Science degree will be able to complete their degree program in four semesters or one academic year and one summer session. M.A.T. candidates should expect to complete a program in approximately three semesters and one summer session.
Required courses in the programs and a broad selection of electives are offered regularly during summer sessions. In addition, each semester of the academic year at least one course of interest to teachers is offered by the Division of Mathematical Sciences during the late afternoon or evening.

Doctoral Programs
Most of the recent graduates of the Ph.D. program have found positions teaching in universities or colleges. Within the Ph.D. program there is ample opportunity to take courses in applicable mathematics, both in the Mathematics Department and other departments in the Division. There is thus no formal departmental policy distinguishing between pure and applied mathematics, although the department faculty itself is considerably stronger in the “pure” area.
The Department of Mathematics also cooperates in interdisciplinary doctoral programs with the programs 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, and passing of a comprehensive qualifying examination as described below. Also required in the field of research chosen by the candidate is a comprehensive examination, the writing of a thesis and a final examination. Ordinarily, the candidate must demonstrate to the department’s satisfaction proficiency in French, German, or Russian.
The qualifying examination covers three 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 advisors’ 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 advisor for an evaluation of the previous work and the planning of further study.

Faculty Roster
Professoress Carr, Goldberg, Kirk, E. Kleinfield, Konie, Lie, Oberg, Oehme, Price, Ohe, Wenz, Zwig; professors America, Chilisandri, Cowdery; associate professor Ankinson, Bolds, Berks, Fuller, Gearty, Helkote, Ichihara, Johnson, N. Johnson, Lambski, Linsden, Mathes, Murphy, assistant professors Camillo, Hens, Khusrawi, M. Kleinfield, Nastori, Rosenman, Simon, Strzyz; instructor Macagno; visiting assistant professor Beebe.

Courses
Undergraduate: Lower Division
These courses are not open to graduate students except by special arrangement with the chairman of the Department.

258-1 Basic Mathematical Terminology
1 a.h.
Integers, fractions, ratios and proportions, algebraic expressions and operations, similar and dissimilar figures, quantities of algebraic and inequalities
Prerequisites: one year of high school algebra, one year of high school geometry.

258-2 Mathematics for Scientists and Engineers
3 a.h.
Equations and inequalities, functions and graphs, exponential and logarithmic functions, properties of algebraic and inequalities
Prerequisites: 258-1 or one and one-half years of high school algebra, one year of high school geometry.

258-3 Mathematics for the Social Sciences
3 a.h.
Elementary functions, solutions of linear and quadratic equations, systems of equations, solutions of algebraic and inequalities
Prerequisites: 258-1 or two and one-half years of high school algebra, one year of high school geometry.

258-4 Matrix Algebra
3 a.h.
Elementary manipulations of matrices and determinants, rank and nullity of matrices, properties of linear equations, determinants
Prerequisites: 258-2 or two and one-half years of high school algebra or 258-1.

258-7 Quantitative Methods
4 a.h.
Quantitative methods for measuring problems arising in biological, management and social sciences; computer programming, systems of linear equations, linear programming, descriptive statistics, and probability theory, elements of econometrics
Prerequisites: Business 226 or Sociology 226

258-10 Fundamentals of College Mathematics I
4 a.h.
Introduction to the major branches of mathematics: concepts of terms and definitions, sets, numbers, operations and functions
Prerequisites: two and one-half years of high school algebra or 258-1.

258-11 Fundamentals of College Mathematics II
4 a.h.
Introduction to analytic geometry and trigonometry; introduction to ideas of calculus, derivatives, integrals, applications to science and natural sciences; additional elementary topics in number theory, geometry, or topology, at time permitted. Prerequisites: 258-10 (four or more) may be used to satisfy four hours of core requirement in natural sciences.

258-12 Fundamentals of College Mathematics III
4 a.h.
Introduction to analytic geometry and trigonometry; introduction to ideas of calculus, derivatives, integrals, applications to science and natural sciences; additional elementary topics in number theory, geometry, or topology, at time permitted. Prerequisites: 258-11 or 258-60.
Master’s Degree Programs

The Department offers five M.S. degree programs, with or without thesis.

Non-Thesis

The non-thesis M.S. degree is awarded upon successful completion of a prescribed course of study, approved by an advisor, involving at least 30 semester hours of graduate work. Study culminates in a final examination usually consisting of at least two, two-hour written examinations.

The specific course requirements for the non-thesis 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

22M:115 Introduction to Analysis I
22S:153,154 Introduction to Mathematical Statistics I,II
22M:167 Introduction to Stochastic Processes I
and at least six semester hours from among:
22M:116 Introduction to Analysis II
22M:310,211 Analysis I,II
22S:160 Applied Statistical Decision Theory
22S:168 Introduction to Stochastic Processes II
22S:170 Introduction to Nonparametric Statistics
22S:172 Topics in Statistics
22S:223 Foundations of Statistics I
22S:225 Analysis of Variance
22S:226 Multivariate Analysis
22S:271,272 Statistical Inference I,II

Applied Statistics

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

22S:103 Introduction to the Design of Sample Surveys
22S:138 Biostatistics I
22S:153,154 Introduction to Mathematical Statistics I,II
22S:158 Design and Analysis of Experiments
22S:162 Regression Analysis
22S:173 Statistical Computation and Consultation
22S:200 Introduction to Computing with Fortran

The remaining courses may be selected from among:

22S:133 Quality Control and Reliability
22S:148 Introduction to Statistical Methodology
22S:160 Applied Statistical Decision Theory
22S:161 Application of Multivariate Statistical Techniques
22S:170 Introduction to Nonparametric Statistics
22S:209 Bayesian Statistics II
22M:170 Numerical Analysis: Nonlinear Equations and Approximation Theory
56:143 Digital Signal Processing I
56:250 Quantitative Investment Analysis I

Other courses relevant to applied statistics, but not appearing on this list, may be selected for inclusion in the M.S. program in consultation with the advisor.

Actuarial Science

22S:133,154 Introduction to Mathematical Statistics I,II
22S:177 Numerical Analysis for Actuaries
22S:178 Graduation
22S:179 Advanced Mathematics of Finance
22S:180 Mathematics of Life Insurance
22S:181,182 Actuarial Theory and Practice I,II
22S:183 Construction of Demographic Tables
22S:184 Risk Theory
22S:297 Seminar: Actuarial Theory

Plus at least one course from outside the Division of Mathematical Sciences; most statistics electives from the College of Business Administration.

Operations Research

22S:151,154 Introduction to Mathematical Statistics I,II
22S:160 Applied Statistical Design Theory
56:230 Quantitative Investment Analysis I
56:242 Mathematical Programming I

It is also recommended that the following be taken:
22S:167,168 Introduction to Stochastic Processes I,II
56:243 Mathematical Programming II

Biostatistics

22S:101 Biostatistics
22S:140 Design Analysis of Experiments in Biomedical Sciences
22S:120 Probability and Statistics
22S:153 Introduction to Mathematical Statistics I
22S:183 Construction of Demographic Tables
56:107 Engineering-Management Science

69:156 Operations Management
22S:158 Design and Analysis of Experiments
22S:161 Application of Multivariate Statistical Techniques
22S:103 Introduction to the Design of Sample Surveys
22S:173 Statistical Computation and Consulting
In addition, each student is expected to take 15 hours in the health and/or biological sciences, although part of this may be satisfied by courses previously completed at the undergraduate level.

With Thesis
A student who chooses to earn the M.S. degree with thesis fulfillment is to follow the same program as those described above, except that up to eight semester hours may be earned by writing a thesis. Each candidate will have a committee of three members appointed by the chairman of the Department. This committee will have the responsibility of recommending action on the candidate's degree application. This recommendation is usually based on the results of two two-hour examinations on the topics covered in the specified courses within each program.

The Doctor of Philosophy
All doctoral students in statistics must successfully complete two of these sequences: 225/225 Analysis of Variance and 225/226 Multivariate Analysis, 225/226/225 Theory of Probability I, and/or 225/227/227 Statistical Inference I. Students in the applied statistics program are also required to take 225/236 Bayesian Statistics I during their first year.

During the first year or two, the student may wish to take coursework or seminars toward the achievement of certain auxiliary goals of the doctoral program in statistics—to refine his or her area 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 be able to respond in personal contacts with foreign statisticians.

Each student is required to include in his or her program a component which involves experience in either teaching or statistics consulting.

At least by the end of the spring semester of the second year in the Department, the student would have taken the qualifying examination to determine if he or she has mastered the basic concepts of probability and statistics. Examination essentially covers topics covered in 225/225 Introduction to Mathematical Statistics I, 225/226 Introduction to Stochastic Processes I and 225/226 Design and Analysis of Experiments (or 225/236 Design of Experiments). A study guide for this examination is available from the Department. This examination may be used in lieu of the macon's written examination.

Typically in the third year of graduate work, and after passing the qualifying examination, the student should seek permission of the Department chairman to take the preliminary examination, consisting of the student's choice of one of these:

Applied Statistics—covers topics in 225/226 Applied Analysis of Multivariate Statistical Techniques, 225/226 Regression Analysis and 225/236 Design and Analysis of Experiments (or 225/236 Design of Experiments);


Mathematical Analysis—covers material in 225/231/232, 225/233, 225/234 Analysis I, II.

After passing the preliminary examination, the student should obtain a thesis advisor. They should prepare a plan of study, then ask the Department to submit a request for the comprehensive examination. In the student's second year, the student should have completed the comprehensive examination. In the student's third year, the student should be preparing for the final oral examination. The purpose of the final oral examination is to allow the student a chance to demonstrate his or her ability to understand and present the results of his or her dissertation. The purpose of the final oral examination is to allow the student a chance to demonstrate his or her ability to understand and present the results of his or her dissertation. The purpose of the final oral examination is to allow the student a chance to demonstrate his or her ability to understand and present the results of his or her dissertation.

A student who has not passed the preliminary examination may be allowed to make up deficiencies in the comprehensive examinations by taking the appropriate courses or by writing a thesis. A student who has not passed the preliminary examination may be allowed to make up deficiencies in the comprehensive examinations by taking the appropriate courses or by writing a thesis.

In Iowa's Tradition
Professor H. L. Rietz, who served The University of Iowa from 1918 until 1942, was a pioneer in mathematical statistics and actuarial science. He 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, but its commitment is the same.

Faculty Roster
Courses

Primary for Undergraduates

Note: No student who has received credit for a course offered by the Department of Mathematical Sciences may receive credit for a course numbered below 225:100. Please consult the University Catalog for complete course descriptions.

225:08 Quantitative Methods 2
4 cr.
Combination of 225:07, growth models, elements of calculus, basic statistical methods, regression and tests of significance.

225:10 Elementary Probability and Statistics 3 cr.
See approach to probability, assignment of probability using permutations and combinations, distribution of random variables and statistics, descriptive statistics, the normal model, the central limit theorem, the binomial distribution, sampling distributions, estimation, hypothesis testing, regression. Same as Engineering 91-09. Prerequisite: Mathematics 224:06 or equivalent.

225:03 Mathematical Models 3 cr.
Systems in physical, management and social science studied, and mathematical models for systems commonly studied. Use of models critically examined. Prerequisite: Mathematics 224:06 or equivalent.

225:06 Insurance Mathematics 4 cr.
Elements from probability and mathematical statistics developed and applied to problems in determination of insurance premiums, hazards and reserves. Same as Business Administration 65-87. Prerequisite: Mathematics 224:24 or 224:34. Students with Mathematics 224:24 of 224:34 should take 225:06.

For Undergraduates and Graduates

225:05 Biomathematics 3 cr.
Elements of course in statistical methods primarily for research in biological fields and related fields. Same as Preventive Medicine and Environmental Health 63-160. (Same as 225:05.)

225:10 Introduction to Statistical Methods 3 cr.
Primarily for students who are not science majors; students should not take both 225:10 and 225:102. Same as Education 79-12. Psychology 31-165.

225:10 Introduction to the Design of Sample Surveys 3 cr.
Same as Preventive Medicine and Environmental Health 63-165. Prerequisite: Mathematics 224:24 or 224:34.

225:10 Data Collection 4 cr.
Same as Government 63-124.

225:10:2 Probability and Statistics 4 cr.
Preliminary probability and statistics; random variables, functions of random variables, expectation, density functions and continuous distributions, estimation and hypothesis testing, regression. Same as Psychology 63-124.

225:12 Introduction to Probability 3 cr.
Same as Mathematics 225:12.

225:131 Statistical Methods with Applications 3 cr.
Same as Industrial and Management Engineering 56-131.

225:132 Engineering Statistics 3 cr.
Same as Industrial and Management Engineering 56-132. Prerequisite: Mathematics 225:09 or equivalent.

225:131 Quality Control and Reliability 3 cr.
Same as Industrial and Management Engineering 56-133. Prerequisite: Mathematics 225:12.

225:14:2 Probability and Statistics 3 cr.
Same as Education 79-120. Prerequisite: Mathematics 225:10.

225:14 Design Analysis of Experiments in Biomedical Sciences 3 cr.
Same as Preventive Medicine and Environmental Health 62-162.

225:16 Introduction to Mathematical Statistics 4 cr.
Same as Mathematics 306:16.

225:18 Inversion to Mathematical Statistics I 4-6 cr.
Basic probability models, distribution of statistics, interval estimation, order statistics, sampling distributions, sufficient statistics. Prerequisite: Mathematics 324:06 or 324:34.

225:104 Introduction to Mathematical Statistics II 4 cr.
Continuation of 225:111. Point estimation, statistical hypothesis, analysis of variance, further sample distribution theory.

225:101 Applied Time Series Analysis 3 cr.
Discrete time series and linear time series models. Spectral density function, linear stationary and nonstationary models, identification, estimation and forecasting. Linear time series models. Estimation of the spectral density; analysis of time series data via general purpose digital computer. Prerequisite: Mathematics 225:10 or 225:111.

225:107 Correlation Methods 3 cr.
Same as Psychology 31-124. Prerequisite: Mathematics 225:10 or 225:111.

225:106 Design and Analysis of Experiments 4 cr.
Models in analysis of variance, single factor multiple comparisons, ranking and selection, multiple factors, crossed and nested experiments, incomplete block designs, Latin squares and hypercubes, mixed models, balanced and unbalanced experiments, split plot experiments, confounding, fractional experiments, analysis of covariance. Same as Industrial and Management Engineering 56-231. Prerequisite: Mathematics 225:10 or 225:111.

225:109 Design of Experiments 4 cr.
Same as Education 79-124. Psychology 31-124.

225:100 Applied Statistical Decision Theory 3 cr.
Same as Industrial and Management Engineering 56-233. Prerequisite: Mathematics 225:10 or 225:111.

225:104 Analysis of Multivariate Statistical Techniques 3 cr.
Same as Education 79-125. Psychology 31-126. Prerequisite: Mathematics 225:10 or 225:111.

225:102 Regression Analysis 3 cr.
Same as Industrial and Management Engineering 56-234. Prerequisite: Mathematics 225:10 or 225:111.

225:103 Distribution Free Statistical Methods 3 cr.
Same as Education 79-127. Psychology 31-127.

225:107 Introduction to Stochastic Processes I 3 cr.
Wiener, Poisson and related processes, generalizations of the Poisson process, renewal processes and stationary processes, applications selected from physical, biological, and social sciences.

225:108 Introduction to Stochastic Processes II 3 cr.
Continuation of 225:107. Markov chains, birth and death processes, continuous time Markov processes, applications from various fields.

225:105 Introduction to Nonparametric Statistics 3 cr.
One sample statistics, efficiency, testing, point and interval estimation, two and multiple sample problems, applications.

225:106 Topics in Statistics 3 cr.
Preliminary discussion by instructor to televise relevence; basic ideas in probability and statistics will be applied to building models of real systems, making scientific inferences and engineering decisions.

225:173 Statistical Computation and Consulting 1-4 cr.
Studies centered for two one-hour hours study use of standard computer programs for analyzing data and performing statistical estimation and testing procedures; students enrolled for four cr. also carry one consulting project involving statistical problems arising in research projects carried on by University students and faculty members. Consulting aspect of course two cr. may be repeated. Prerequisite: Mathematics 225:10 or 225:111.

225:177 Numerical Analysis for Actuarial 3 cr.
Introduction to calculus of finite differences, interpolation, numerical differentiation and integration, solution of nonlinear equations. Prerequisite: Mathematics 225:10 or 225:111.

225:176 Advanced Mathematics of Finance 3 cr.
Commuter interest, annuities certain, bonds, depreciation, sinking funds and the determination of yield rates. Prerequisite: Mathematics 225:10 or 225:111.

225:180 Mathematics of Life Insurance 3 cr.
Elements from probability and mathematics of finance applied to problems of price-benefit structure determination in life insurance. Prerequisite: Mathematics 225:10 or 225:111.

225:181 Actuarial Theory and Practice I 3 cr.
Mathematical theory of life contingencies of both single and multiple lives. Prerequisite or corequisite: 225:179.

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chosen major, and to provide them with a broad background in other subjects, so they may relate microbiology to other fields of human endeavor.

As undergraduate student majoring in microbiology at Iowa must meet general College of Liberal Arts requirements. The student must complete a minimum of 14 semester hours in microbiology to obtain a B.S. degree. No more than 3 semester hours of special problems (61:161) may count toward this requirement. Mathematics and science courses required by the Department for the B.S. degree should be taken for letter grades, except under unusual circumstances with the consent of the adviser. This is a typical curriculum for undergraduate majors:

Sophomore Year

| First Semester | 4:121 Organic Chemistry I | 3 |
|               | 37:3 Principles of Animal Biol-try | 5 |
|               | Core | 4-8 |
| or | 22M:26 Calculus II | 5 |

Second Semester

| 4:122 Organic Chemistry II | 3 |
| 4:141 Intermediate Chemistry Laboratory I | 2 |
| 4:11 Elementary Quantitative Analysis | 4 |
| Core | 8 |

Junior Year

First Semester

| Biochemistry (09:120) | 3 |
| Physical Education | 2 |
| Core | 8 |

Second Semester

| Microbiology (61:158) ** | 5 |
| Biochemistry (09:130) | 3 |
| Physics (29:2) | 4 |
| Core or Elective | 4 |

Senior Year

First Semester

| Advanced Microbiology Course(s) | 3-4** |
| Core or Electives | 5-14 |

Second Semester

| Advanced Microbiology Course(s) | 3-4*** |
| Core or Electives | 10-13 |

** The student must complete a minimum of 14 semester hours in microbiology to obtain a B.S. Degree. No more than 3 semester hours of special problems (61:161) may count toward fulfilling this requirement.

*** Mathematics and science courses required by the Department for a B.S. Degree should be taken for letter grades, except under unusual circumstances with consent of the adviser.

The Honors Program

Open to seniors with a grade-point average of at least 3.0 overall and a 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.

Graduate Study, Faculty Roster, Courses

See "College of Medicine."

Museum Training

Department Head: George D. Stripling

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. A major in general science or science education is recommended for students preparing for professional museum careers. Techniques practiced in the Museum Laboratory are of value not only to those intending to pursue museum careers, but also to preprofessional, geological, zoological and anthropological students. Advanced museum students are afforded the opportunity to gain practical working experience by participating directly in the Museum of Natural History exhibit program. The museum field is expanding rapidly, and graduates of the University present positions of responsibility as directors, curators and exhibit specialists in museums throughout the United States and Canada.

Faculty

Curator and instructor: Stripling

Courses

(All registration by consent of instructor)

24:101 Museum Techniques 1-2 s.h.

24:121 Museum Techniques Collecting, preparing and exhibiting biological materials for museums, classroom teaching or repository use. 1-2 s.h.

24:195 Museum Techniques Conservation of 24:101, but may be taken as independent study 1-2 s.h.

24:196 Museum Accessory Work 1-2 s.h.

Techniques used in preparation of classroom teaching materials and museum exhibit accessories; instruction in various copying and modeling procedures used in reproduction of fossils, sets and other biological specimens; applications to prehistoric, geological and anthropological studies.

* 22M:16 or the combination of 22M:25 and 22M:26 are optional but may be desirable for students planning to do graduate work.
Music

School Director: Harvey Vauxman


A primary element in a fine arts community of international repute, the University of Iowa School of Music has long been recognized as one of the excellent university-based schools of music in the United States.

The school's on-campus enrollment of 340 undergraduate and 230 graduate students majoring in music is large enough to sustain strong programs in all areas of specialization, yet small enough to ensure the individual attention essential to each student's development.

The faculty consists of highly trained artist-teachers in each area of specialization. Faculty ensembles in residence include the Stradivari String Quartet, Iowa Wind Quintet, Iowa Brass Quintet, Percussion Quartet, Vocal Quartet and Baroque Trio. Private lessons with faculty members are offered in all band and orchestra instruments, voice, piano and organ.

Frequent recital appearances help the student develop musical competence and poise. Participation in a variety of ensembles provides additional valuable training and experience.

At the undergraduate level, the School's curricula offer all qualified students the opportunity for the further study of music toward either professional or avocational goals. The graduate curricula are designed primarily as preparation for teaching in secondary schools or colleges and universities, and for careers in performance.

The school is a charter member of the National Association of Schools of Music.

Undergraduate Programs

Most of the School's baccalaureate graduates enter teaching. There are also opportunities in sales and merchandising, clinical programs and other areas of the music industry, and in church music, music librarianship and recording and broadcasting.

The School offers two undergraduate degrees: the Bachelor of Arts and the Bachelor of Music. Curricula are the same for both, with these exceptions: candidates for the B.M. degree may, and candidates for the B.A. may not, count more than 30 semester hours of coursework in music toward the 124 semester hours required for graduation; and the foreign language requirement for the B.M. is one year of college-level study, while the requirement for the B.A. is two years.

Areas of concentration offered in both programs are performance, music education and composition/theory.

General Requirements

All undergraduate enrollees require School of Music approval. Entering undergraduate students planning to major in music are expected to audition either in person or by tape recording in advance of registration. All transfer students must also take the Advisory Examination in music theory (see "Graduate Degree"). Any serious deficiencies in theory must be removed through registration in 25:11 Review Theory.

All baccalaureate candidates in music must satisfy all College of Liberal Arts general requirements except the historical-cultural core requirement (see the College of Liberal Arts section of the Catalog for these requirements), and the following requirements of the School:

A. 25:1 Literature and Theory I 3 s.h.
B. 25:2 Literature and Theory II 3 s.h.
C. 25:3 Aural Skills I 1 s.h.
D. 25:4 Aural Skills II 1 s.h.
E. 25:5 Literature and Theory III 3 s.h.
F. 25:6 Literature and Theory IV 3 s.h.
G. 25:7 Aural Skills III 1 s.h.
H. 25:8 Aural Skills IV 1 s.h.

Four semester hours of electives from the following:

I. 25:15 Undergraduate Composition 2 s.h.
J. 25:17 Arranging for Band 2 s.h.
K. 25:30 Contrapuntal Forms 3 s.h.
L. 25:46 20th-Century Harmony and Counterpoint 3 s.h.
M. 25:47 Total Forms 3 s.h.
N. 25:48 Analysis of Music Literature, 1600-1750 3 s.h.
O. 25:19 Analysis of Music Literature, 1750-1828 3 s.h.
P. 25:50 Analysis of Music Literature, 1825-1900 3 s.h.
Q. 25:51 Analysis of Music Literature, 1890-Present 3 s.h.
R. 25:52 Analysis of Music Literature, Special Topics 3 s.h.
S. 25:55 Studies in Jazz 2 s.h.
T. 25:57 Orchestration 2 s.h.
U. 25:77 Thorough Bass Realization I 2 s.h.

V. 25:91 History of Music I 3 s.h.
W. 25:92 History of Music II 3 s.h.
X. 25:71 Class Piano I (or adequate proficiency) 1 s.h.
Y. 25:72 Class Piano II (or adequate proficiency) 1 s.h.

D. Four years of private study.

E. Four years of participation in band, orchestra or choir. As a minimum requirement, wind and percussion majors shall participate in the band program during the first two years in residence at the University—female students in concert band and male students in both marching and concert band. Any requests for adjustment of the rules pertaining to performance in large ensembles must be submitted to a reviewing committee.

F. 25:85 Recital Attendance. Required of wind, percussion and voice majors for seven semesters.
G. 25:142 Senior Recital.

H. Advanced electives in performance (including chamber music and piano accompanying), theory, composition, music education, music history and literature, orchestration, and conducting.

Music Education

Areas of concentration in music education are instrumental music, vocal music and general music. In addition to the B.A. or B.M. requirements in music and liberal arts, certification to teach music in Iowa schools requires satisfactory completion of specific requirements in the area of concentration. Requirements in the instrumental and vocal areas are listed below. The requirements in the general music area may be obtained from the Music Education Office, School of Music.

Brass, Woodwind or Percussion Majors

All brass, woodwind and percussion majors in the music education program must participate in concert band four fall semesters. Men are also required to participate in marching band four fall semesters. Courses Required:

- 25:143 (25:103) Instrumental Techniques 8 s.h.
- 25:107 Instrumental Conducting I 2 s.h.
- 25:108 Instrumental Conducting II 1 s.h.
- 7E:145 Methods and Materials: Elementary School Music 2 s.h.
- 7S:140 Methods and Materials: Secondary School Instrumental Music (fall semester only) 4 s.h.
- 7S:191 Observation and Laboratory Practice in the Secondary School 6 s.h.
- 7E:192 Laboratory Practice in the Elementary School 6 s.h.

String Majors

- 25:21 Violin 2 s.h.
- 25:23 Cello 2 s.h.

Violin and viola majors take one year of cello instruction; cello and bass majors take one year of violin.

- 25:103 Class Strings 1-2 s.h.
- 25:104 Violin: violin and viola; violin and viola: violin and viola; strings take violin and cello.
- 7S:143 (25:105: Intermediate Techniques) 2 s.h.
- 25:107:108 Instrumental Conducting II 2 s.h.
- 7S:150:151 String Techniques and Methods 3 s.h.
- 7E:145:146 Methods and Materials: Elementary School Music 2 s.h.
- 7S:140:141 Methods and Materials: Secondary School Instrumental Music (fall semester only) 4 s.h.
- 7S:191:192 Observation and Laboratory Practice in the Secondary School 6 s.h.
- 7E:192:193 Laboratory Practice in the Elementary School 6 s.h.

Vocal and Keyboard Majors

- 75:147 (25:109) Choral Methods and Conducting 3 s.h.
- 7S:148 (25:110) Choral Literature and Conducting 3 s.h.
- 25:116 Dixie for Singers II 2 s.h.
- 7E:145:146 Methods and Materials: Elementary School Music 3 s.h.
- 7S:142:143 Methods and Materials: Secondary School General Music (fall semester only) 3 s.h.
- 7S:191:192 Observation and Laboratory Practice in the Secondary School 6 s.h.
- 7E:192:193 Laboratory Practice in the Elementary School 6 s.h.

Keyboard majors lacking satisfactory competence in voice also must register for 25:100 Class Voice for two semesters.

Keyboard Majors—Nonvocal Area

Keyboard majors who elect to teach in the nonvocal area must complete the requirements in either the brass-woodwind-percussion or string areas.

Music Teaching Minor for Elementary Education Majors

The minimum of 24 semester hours required in this program must include:

- 7E:119:120 Methods: Basic Skills and Techniques in Music Education 3 s.h.
- 7E:120:123 Methods and Materials: Music for the Classroom Teacher, Sections for music majors, Premusical; 7E:119, 120 3 s.h.
- 7E:192 Laboratory Practice in the Elementary School 2 s.h.
- 7S:191:192 Applied music 2 s.h.
- 7S:191:192 Ensemble participation 2 s.h.

In addition, a minimum of 12 semester hours are to be selected from other music and advanced music education courses (7E and 7S designations), with the approval of the adviser.

Composition/Theory Major

Students are not admitted to this program earlier than the sophomore year. Upon application for admission to the program, the candidate shall be assigned a committee of three faculty members. Admission is based on an evaluation of original compositions submitted to an administration and advisory committee; achievement in theory and composition courses; and keyboard competence, tested by an examination including sight reading (Bach chorale) and performance (Bach invention or work of comparable difficulty).

Course Requirements

- 25:1-8 Literature and Theory I-IV; Aural Skills I-IV
- 25:91, 92 Music Theory I, II
- 25:142 Senior Recital
- Eight semester hours of 25:15 Undergraduate Composition following the sophomore year
- Eight semester hours of theory courses (in addition to 25:1-8)
**Thesis Requirement**

The thesis replaces the senior recital required of applied music majors, and consists of one or more original compositions, approved by the student’s advisory committee and performed in regularly-scheduled School of Music recitals, and/or a committee-approved scholarly paper dealing with theoretical issues.

**Applied Music Requirement**

Until admitted to the program, the student must take private lessons on his or her major instrument or voice. Following admission, he or she will undertake applied music study recommended by his or her advisory committee.

**Ensemble Requirement**

The candidate shall participate in an approved ensemble for four years.

**Honors**

A student with junior or senior standing may undertake Honors work in music with the approval of the director of the College of Liberal Arts Honors program, and provided a School of Music faculty member sponsors the student in Honors status and the student has maintained a minimum grade-point average of 3.0 on all previous work undertaken at the University.

A student maintaining the minimal 3.0 average qualifies for graduation “with Honors” by completing satisfactorily from six to eight semester hours in 25-97 Honors in Music. Types of Honors projects for which credit is given in 25-97 are Honors performances, solo and/or ensemble; Honors compositions, orchestrations, arrangements; and Honors essays, research papers, editorials, translations, etc.

A combination of at least two of these types of projects is required. None of the projects may duplicate projects assigned in other courses or required for graduation, such as 25-142 Senior Recital.

Honors students in music are encouraged to take graduate-level courses. Advanced coursework in music history, music theory and languages is particularly recommended. An honors committee of at least three members is appointed by the Honors sponsor to evaluate the student’s work.

**Financial Aid**

A number of Music Activity Scholarships are available to qualified undergraduate music majors. For information write the School of Music.

**Graduate Programs**

For general graduate admission and degree requirements, see the Graduate College section of the Catalog.

Before an applicant will be considered for admission to a graduate program in music, he or she must have submitted supporting materials in his or her indicated area of concentration, as follows:

- Composition—representative musical scores;
- Theory—analyses or commentaries on musical works;
- Music Education or History and Musicology—research papers;
- Music Literature—research papers and auditions;
- Performance (including conducting)—audition.

The beginning graduate student must take the School of Music’s Advisory Examination in music theory (harmony, ear training, forms and counterpoint), and history and literature, before his or her first registration. The Advisory Examination is given each session on the two days (excluding Sunday) before registration. A leaflet describing the general content of these tests may be obtained from the Director’s Office, School of Music.

**Master of Arts**

Areas of concentration for M.A. degrees are composition, music history and musicology, music education, music literature, music theory and performance (including conducting).

A thesis is required in all areas except music education. Up to eight semester hours of credit may be earned for a research, composition or instrumentation thesis. A maximum of four semester hours of credit is allowed for a performance thesis. One full-length recital is required for a performance thesis, and degree credit will not be given for a recital graded lower than B.

It is expected that original compositions will be tested by audition before being submitted as theses.

All curricula for the Master of Arts degree must include 25-321 Introduction to Graduate Study in Music, and:

**Theory**

Two of the following:

- 25-130 Counterpoint Forms
- 25-141 Tonal Forms
- One elective from the analytical studies sequence (25-148-152) or equivalent.

If exempted from either 25-130 or 25-147 as a result of the Advisory Examination, the student shall take the one from which he was not exempted, and the elective from the analytical studies sequence. If exempted from both 25-130 and 25-147, only the elective from the analytical studies need be taken. Any serious deficiencies revealed in the Advisory Examination in music theory training are to be removed through 25-11 Review Theory.

**Music History**

25-301, 302 Advanced History and Literature of Music I, II, or equivalent, or satisfactory score on the Advisory Examination.

If exempted from 25-301 and/or 25-302 as a result of the Advisory Examination, the student should elect another course from the music history sequence, 25-301 to 25-319. Courses 25-323, 25-330-332 and others offered by the musicology staff may be elected in special cases, with permission of the musicology advisor.

**Ensemble participation**

25-182 Opera Theater
25-183 University Chorale
25-191 Ontario Chorus
25-192 Orchestra
25-194 Symphony Band, Wind Ensemble, Concert Band

Keyboard majors may substitute accompaniment in place of participation in a large ensemble, at the discretion of their advisor.
Any requests for adjustment of this requirement must be submitted to a reviewing committee.

Electives
Suitable courses in the student's area of concentration.

Music Education

The M.A. program in music education includes all of the M.A. requirements of the School of Music listed above, and:
75:240 Supervision and Administration of Music
75:441 The Psychology of Music
76:245 General Music in the Elementary School
or
76:341 General Music in Secondary Schools

Two of the following:
25:118 Advanced String Methods and Literature
25:174 Advanced Conducting
25:203 Advanced Choral Conducting I
25:204 Advanced Choral Conducting II
25:209 Advanced Instrumental Methods and Literature I
25:210 Advanced Instrumental Methods and Literature II
25:261 Advanced Choral Literature I
25:262 Advanced Choral Literature II

Master of Fine Arts

The M.F.A. is for students of superior ability in the areas of composition or performance (including conducting). It requires a minimum of 48 post-baccalaureate semester hours. In addition to the curricular requirements for the Master of Arts degree, the student must also present at least two full-length recitals or programs (25:401 M.F.A. Thesis), for which a minimum of eight semester hours of credit will be granted. The student may earn a Master of Arts degree while working toward the Master of Fine Arts degree, but all requirements for each degree must be met separately, including two final examinations, with a minimum combined total of 60 semester hours of graduate credit (see the Graduate College section of the Catalog for further details).

Doctoral Degree

General Requirements

All doctoral study in music includes:

Minimum course requirements listed under the M.A. degrees;
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 indicated in the master's degree requirements;
25:179 Physics of Sound and Music or equivalent; and
Reading proficiency in at least one foreign language.

German is the language usually required; most areas require at least one additional language. Music education students may substitute two courses in language for the language requirement. It is recommended that entering students register for a language until they pass the required proficiency examination.


Doctor of Philosophy

Areas of concentration include composition, music history and musicology, music education, music theory and music literature.

The music literature designation is used for programs with major emphasis in choral or instrumental literature, and for programs combining emphasis in more than one area, such as musicology and opera production, theory and organ literature.

Basic requirements for the Ph.D. in music education include, in addition to the requirements for the M.A. in this field, credit in 75:342 Seminar: Special Topics in Music Education, 75:445 Research in Music Education, 75:446 Social and Psychological Factors in Music Education and a minimum of eight semester hours in education. Additional course requirements are determined on the basis of the individual professional needs of each student.

Acceptance into the music education program requires a satisfactory Graduate Record Examination score, demonstration of adequate musicianship, possession of or qualification for a valid teaching certificate, and evidence of successful teaching experience.

Acceptance into the music theory program requires satisfactory achievement on the Advisory Examination in music theory, demonstration of minimal piano proficiency, submission of a qualifying research paper and satisfactory achievement on a qualifying examination.

Requirements for acceptance into and completion of Ph.D. programs in other areas may be obtained from the Director's Office, School of Music.

Doctor of Musical Arts

Requirements for the D.M.A. degree in performance and pedagogy are the general doctoral requirements of the School, except that the D.M.A. dissertation consists of three full-length recitals or two recitals and a concerto performance with orchestra or other appropriate ensemble. Vociology may substitute the execution of one or more major roles in a large-scale work for one of their recitals. Conductors will present two programs.

D.M.A. candidates must also give evidence of their ability to conduct a scholarly investigation of limited scope by means of a written essay.

Graduate Awards

Qualified graduate students are invited to apply for teaching and research assistantships. Inquiries should be directed to the School of Music.

Opportunities for Performance

The following organizations provide many performing opportunities for qualified students:
Camera Singers
Old Gold Singers
Kantoris
University Choir
Music for Non-Majors

Students who are not majoring in music but have an avocational interest in it may find 25:159 Late 18th- and 19th-Century Composers, 25:160 Early 18th- and 20th-Century Composers or 1139, 40 Masterpieces of Music, helpful in acquainting them with music as listeners.

The course 25:159 Fundamentals of Music is for non-majors who have little or no experience with notation, theory and aural skills. With the instructor's approval, non-majors with an elementary background in music may register for 25:1, 2 Literature and Theory I, II and 25:161 Survey of Opera.

Non-majors interested in performance should consult music advisors regarding appropriate courses in applied music (solo and ensemble).

Special Programs

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, the first program 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, theater and creative writing areas. The Center's basic purpose is to encourage talented young artists to develop their creative skills through multimedia and intermedia classes, projects and performances.

Facilities

With completion of the new Music Building (1971) and adjoining O'Connor 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 faculty and seminar rooms, the Music Building includes 55 teaching studios, 73 practice rooms, a large library, two electronic music laboratories, soundproof ear training and listening facilities with 50 listening posts, four large rehearsal halls, ample solo and ensemble practice facilities, professional recording facilities, eight practice and recital organs and a 720-seat recital hall. Hanover Auditorium seats 2,680 people for concerts. 4,000 for opera and other stage productions.

Library resources include more than 40,000 volumes of music and books—increasing at the rate of approximately 2,000 a year—and more than 1,200 reels of microfilm, a microcard file of approximately 300 titles, nearly 3,000 LP records and 150 periodicals in several languages. The acquisition program gives particular attention to a strong reference collection, emphasizing resources for music research and performance. The library's quarters in the Music Building provide 24 study carrels, a microcomputer room, a typing room, a seminar and recital room, a large reading area and a separate area for the Goldman Band Library, one of the world's most famous collections of band music.

Faculty Roster


Courses

Primary for Undergraduates

Theory and Composition

25:1 Literature and Theory I 3 s.h.
Reading, singing and playing skills; fundamentals of music theory. Computer: 25:1.

25:2 Literature and Theory II 3 s.h.

25:3 Aural Skills I 1 s.h.

25:4 Aural Skills II 1 s.h.

25:5 Literature and Theory III 3 s.h.

25:6 Literature and Theory IV 3 s.h.

25:7 Aural Skills III 1 s.h.

25:8 Aural Skills IV 1 s.h.

25:9 Fundamentals of Music 3 s.h.
Musical elements, elementary notations, harmonic and harmonic theory; basic aural skills; for students with little or no previous experience. Not open to music majors.

25:11 Review Theory 3 s.h.

25:12 Undergraduate Composition 3 s.h.
Prerequisite: 25:2.

History and Research

25:20 Recital Attendance 0 s.h.

25:21 History of Music I Prerequisite: music majors, 25:5 and 25:6 or equivalent; non-majors, consent of instructor.

25:22 History of Music II Prerequisite: 25:21, but may be taken as independent study. Prerequisite: same as for 25:21.

25:27 Honors in Music 1-4 s.h.
May be repeated for credit.

Courses for Undergraduates and Graduates

Music Education

When dual majors are indicated, students preparing for Music Teacher Certifi-

134 cate should register under education number.
### Music

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>25:240</td>
<td>Advanced Choral Conducting III</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>25:246</td>
<td>Advanced Choral Conducting IV</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>25:250</td>
<td>Advanced Choral Conducting V</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>25:255</td>
<td>Contemporary Choral Conducting</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>25:260</td>
<td>Advanced Instrumental Methods and Literature I</td>
<td>2-3 a.h.</td>
</tr>
<tr>
<td>25:266</td>
<td>Music Education Workshop: Instrumental Methods II</td>
<td>1 a.h.</td>
</tr>
<tr>
<td>25:268</td>
<td>Private Lessons</td>
<td>2-3 a.h.</td>
</tr>
</tbody>
</table>

### Theory and Composition

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>25:230</td>
<td>Practice Teaching in Theory</td>
<td>1 a.h.</td>
</tr>
<tr>
<td>25:232</td>
<td>Advanced Practice Teaching in Theory</td>
<td>1 a.h.</td>
</tr>
<tr>
<td>25:236</td>
<td>Principles of Teaching Theory</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>25:238</td>
<td>Techniques of Teaching Theory</td>
<td>2 a.h.</td>
</tr>
</tbody>
</table>

### Performance Practices: Medieval and Renaissance

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>25:250</td>
<td>Advanced Electronic Studio I</td>
<td>1 a.h.</td>
</tr>
<tr>
<td>25:251</td>
<td>Electronic Studio II</td>
<td>1 a.h.</td>
</tr>
</tbody>
</table>

### Keyboard Literature and Study

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>25:291</td>
<td>Advanced Choral Literature I</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>25:292</td>
<td>Advanced Choral Literature II</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>25:293</td>
<td>Advanced Choral Literature III</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>25:294</td>
<td>Advanced Choral Literature IV</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>25:295</td>
<td>Style in Western Music</td>
<td>3 a.h.</td>
</tr>
</tbody>
</table>

### Theatre

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>25:200</td>
<td>Advanced Musical Theatre</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>25:201</td>
<td>Renaissance Theatre</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>25:202</td>
<td>17th-Century Theatre</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>25:203</td>
<td>The Age of Bach and Handel</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>25:205</td>
<td>The Classical Period</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>25:208</td>
<td>19th-Century Theatre</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>25:210</td>
<td>20th-Century Theatre</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>25:212</td>
<td>Music of the Americas II: Latin America</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>25:213</td>
<td>Major Composers</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>25:214</td>
<td>Sources of Music</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>25:216</td>
<td>The History of Musical Instruments</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>25:218</td>
<td>World and Non-Western Instruments, their social uses and geographical distributions</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>25:219</td>
<td>Principles of Construction and Maintenance of Musical Instruments</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>25:220</td>
<td>Primitive Music</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>25:221</td>
<td>Oriental Music</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>25:222</td>
<td>Introduction to Graduate Study in Music</td>
<td>3 a.h.</td>
</tr>
</tbody>
</table>

### Music Education Workshop: Instrumental Methods

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
</table>

### Courses in 25:260-314 are a series of intensive surveys of special areas in the humanities. Each course is offered at least approximately every two or three years. The courses are designed for students range from 25:260 to 25:314. Students may take in independent study with permission of instructor. Individual study in special areas of interest. Individual study in special areas of interest. Individuals may consult the department for further information. **Individual study in special areas of interest.**
Music Education
See "College of Education" for course descriptions.

75:114 Music Education: Basic Skills and Techniques in Music Education 3 s.h.

75:120 Methods and Materials: Music for the Classroom Teacher 3 s.h.

75:145 Methods and Materials: Elementary School Music 2-3 s.h.
75:182 Methods Workshop for Classroom Teachers and Elementary Music Teachers 1 s.h.

75:192 Laboratory Practice in Elementary School 3 s.h.
75:199 General Music in the Elementary School 2 s.h.
75:140 Methods and Materials: Secondary School Instrumental Music 4 s.h.
75:143 Methods and Materials: Secondary School General Music 3 s.h.

75:191 Observation and Laboratory Practice in Secondary School 3 s.h.

75:240 Supervision and Administration of Music 2 s.h.
75:241 Music Education Workshop: Instrumental Music in the Public School 3 s.h.

75:249 General Music in Secondary Schools 3 s.h.

75:345 Social Studies: Special Topics in Music Education 3 s.h.

75:348 Music Education Workshop: General and Choral Music in the Secondary School 1 s.h.

75:441 The Psychology of Music 3 s.h.

75:444 Music Education, Advanced Observation and Laboratory Practice 3 s.h.

75:445 Measurement and Evaluation in Music Education 3 s.h.
75:446 Research in Music Education 3 s.h.

Lab required. Permission of instructor.
75:480 Social and Psychological Factors in Music Education 2 s.h.

Lab required. Permission of instructor.

Applied Music
A fee of $30 per semester is charged for each applied music course in the student's major field of performance. A minimum of individual or a combination of individual and class hours, at the option of the instructor. Lessons are a minimum of one hour per week. Students existing two semesters in the same semester are exempted a $10 fee. All music majors are required to attend concerts of the applied music courses for which they register.

Students must be enrolled in a music major and have a minimum of 20 hours in the major to register for any applied music course. Some courses may require a minimum of two years of pre-requisite music instruction to register for applied music.

25:53 Voice 1 1 s.h.
25:54 Voice 1 arr.
25:54 Trumpet 1 arr.
25:55 Organ 1 1 s.h.
25:56 Euphonium 1 arr.
25:57 Violin 1 arr.
25:58 Flute 1 arr.
25:59 Cello 1 arr.
25:60 String Bass 1 arr.
26:61 Woodwind 1 arr.
25:62 Brass 1 arr.
25:63 Percussion 1 arr.
25:64 Vocal 2 arr.
25:65 String 2 arr.
25:66 Organ 2 arr.
25:68 Wind 2 arr.
25:69 Viole 2 arr.
25:70 Viole 2 arr.
25:71 Cello 2 arr.
25:72 String Bass 2 arr.
25:73 Woodwind 2 arr.

25:54 Brass 2 arr.
25:55 Percussion 2 arr.
25:56 Plano 3 arr.
25:57 Organ 3 arr.
25:58 Horn 3 arr.
25:59 Viola 3 arr.
25:59 Viole 3 arr.
26:58 Cello 3 arr.
26:59 String Bass 3 arr.
26:60 Viola 3 arr.
26:60 Cello 3 arr.
26:61 Woodwind 3 arr.
26:62 Bass 3 arr.
26:63 Percussion 3 arr.
26:64 Piano 4 arr.
26:65 Organ 4 arr.
26:66 Harp 4 arr.
26:67 Viola 4 arr.
26:68 Violin 4 arr.
26:69 Cello 4 arr.
26:69 String Bass 4 arr.
26:70 Woodwind 4 arr.
26:71 Brass 4 arr.
26:72 Percussion 4 arr.
26:73 Senior Recital arr.

Music Field (Open to Non-Majors)
Description in a student's minor field of performance or for non-music majors is open to all students.

25:57 Voice 2 6-7 s.h.
25:58 Piano 2 1 s.h.
25:59 Organ 2 1 s.h.
25:60 Harp 2 1 s.h.
25:61 Viola 2 1 s.h.
25:62 Viole 2 1 s.h.
25:63 Cello 2 1 s.h.
25:64 String Bass 2 1 s.h.
25:65 Woodwind 2 1 s.h.

Non-majors are limited to enroll in music courses. Courses may be repeated for credit. Permission of each course of instruction.

25:179 Ethiopian Dance 2 1 s.h.
25:180嗷嗷 2 1 s.h.
25:151 Old Gold Singers 2-3 s.h.
25:182 Opera Theater arr.

Neurosciences

Committee Chairman: Lucas G. Van Oordt III

Broad interdisciplinary teaching and research training programs have been developed, involving the departments of Anatomy, Biochemistry, Pharmacology, Physiology and Biophysics, Psychology and Zoology. Various aspects of these programs are available to undergraduates and graduate students. Interdisciplinary courses, seminars, informal workshops and individual research projects constitute a large part of the Neurosciences Program, which are conducted more fully under "College of Medicine."

Nuclear Medical Technology

Director: R. E. Peterson
Program Coordinator: G. Hirtzelstad
Degree offered: B.S.

Nuclear medical technology is that portion of the allied health professions field which encompasses the techniques of using radionuclides in medicine. The burgeoning of new techniques for studying body processes and imaging organs and disease sites has generated the development of nuclear medicine as a new medical specialty. Simultaneously, a wider variety of sophisticated equipment unique to the field has come into use, along with an increasing variety of radionuclides and radiopharmaceuticals. The breadth of these specialized procedures, in addition to volume demands, led to the development of this new allied health occupation.

Nuclear medical technologists work predominantly in hospitals and clinics in all phases of radiological use in medicine: daily preparation of radiopharmaceuticals for use in patients; preparation of patients for organ imaging, blood flow studies, metabolite absorption and utilization studies, or quantification of total body content of a variety of substances; carrying out any of the above studies, including paying image or data records for physician review; using reagents tagged with radionuclides in a variety of highly specific and sensitive assays of hormones, drugs in biologic tissues. The demand for these skills includes opportunities in industrial and governmental laboratories as well as in medical research.

The Program at Iowa

The program in nuclear medical technology at Iowa was begun in 1967 and is accredited by the Council on Medical Education of the American Medical Association. Fulfillment of the requirements established by the AMA Accreditation Board involves three years of preclinical work in the College of Liberal Arts and a minimum of 12 months of professional clinical experience, available in the University of Iowa Medical Center. Upon satisfactory completion of the entire four-year program, the student receives the Bachelor of Science degree with a major in general science and nuclear medical technology, and is eligible for national certification as a nuclear medical technologist.

All students in the College of Liberal Arts who designate nuclear medical technology as a major are assigned to a nuclear medical technology adviser for guidance in the completion of the preclinical courses of study.

Practical Program

The required preclinical course emphasizes the physical and biological sciences, which provide a basic background and which are prerequisites for the subjects and activities of the clinical year. The following is a summary of the prerequisites for acceptance into the nuclear medical technology program:

- A minimum of 27 semester hours distributed among chemistry, physics, and biology.
- A minimum of 12 semester hours in mathematics.
- A minimum of 18 semester hours in biology.

Clinical Program

The clinical year is centered in the University of Iowa Medical Center. In terms of time allocation, both classroom and clinical experiences are emphasized. The classroom portion covers in depth the clinical or technical specialties of physics of nuclear medicine, basic instrumentation, scanning instrumentation, radiochemistry, radiopharmaceuticals, basic pedagogical techniques, electrocardiology, chromotography, radiopharmaceuticals, clinical administration, doctor's conference and scan critique, fundamentals of microbiology, clinical chemistry, kinetic studies, and medical ethics. In vivo clinical experience rotations are established in radiology procedures, clinical radiopharmaceutical laboratory, tracer techniques and research application, thyroid function studies and rectilinear and camera scanning, and in kinetic studies in vivo.
Admission
Prospective students in nuclear medical 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 at present limited to six students, and prerequisites are increasing in importance. Personal interviews are recommended. 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.

Faculty Roster
Professor and student advisor: Peterson; associate professor: Cheng, Choy-bun; instructor: Luce.

Nuclear Science and Technology
Committee Chairman: James G. Osgum
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 departments of Mathematics, Chemistry and Physics in the College of Liberal Arts, and the Radiation Research Laboratory of the College of Medicine.
The program is for students 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 irradiation devices.

Prerequisites
A student who has not taken the following courses before entering the program must take them during the program without credit toward the M.S. degree:
222M:38 Advanced Calculus III
292 College Physics
4.4 Principles of Chemistry II
58:62 Thermodynamics II or
52:150 Chemical Engineering Thermodynamics

Program Requirements
The Master of Science degree in nuclear science and technology requires 36 semester hours with a thesis, 36 semester hours without a thesis. The degree program is intended to be flexible, while conforming as nearly as possible to the following:
Nuclear physics
Recommended: 29-191-192 Atomic-Nuclear Physics
Nuclear reactor analysis and design
Recommended: 52:253 Reactor Design
Nuclear technology
Chemistry
Recommended: 4-170 Advanced Inorganic Chemistry or 4-201 Special Topics in Inorganic Chemistry
Mathematics
Radiations biology
Recommended: 77:103 Introductory Radiation Biology (lecture only), or 77:106 Environmental Radiological Health Physics.
Electives
Advanced courses in chemistry, physics, mathematics, engineering, radiation biology, computer science.
Total (without thesis) 36 s.h.

Admission
To enter the program, a student must have a B.S. degree in engineering, chemistry, physics, mathematics or general science and must satisfy the admission requirements of the Graduate College.

Faculty Roster
Benett (Chemistry), Carlson (Physics), Faus (Radiation Biology), Desert (Chemical Engineering), Tryon, (Mechanical Engineering).

Philosophy
Department Chairman: Ranjana Butchewar
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.
Undergraduate majors are required to take at least 24 semester hours of courses numbered from 26:101 to 26:191, excluding 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 3.0. Individual Honors programs are developed by the student in consultation with his or her advisor in the Department.

Graduate Program

The graduate program in philosophy is designed to train future teachers and scholars in philosophy. The main areas in the graduate curriculum are metaphysics and epistemology, history of philosophy, ethics, logic and philosophy of science. In addition, courses are offered in the philosophy of the social sciences, political philosophy and the philosophies of history, religion, law and literature.

Master of Arts

The Master of Arts degree requires a minimum of 30 semester hours and may be taken without thesis. Course distribution requirements include passing at a high level of performance courses in metaphysics and epistemology, history of philosophy, ethics, logic and philosophy of science. In addition, the student must pass an oral final examination. There is no foreign language requirement.

Doctor of Philosophy

The Doctor of Philosophy degree is granted primarily on the basis of achievement rather than the accumulation of semester hours, but typically takes four years of graduate study to obtain. Candidacy for the doctoral program is formally determined by a vote of the faculty, usually after the completion of three semesters of graduate study. Course distribution requirements include passing at a high level of performance courses in metaphysics and epistemology, history of philosophy, ethics, logic and philosophy of science, and ethics. In addition, the student must pass a written comprehensive examination consisting of a dissertation area examination and a special area examination. Before taking the comprehensive, the student must show mastery of French, German, Greek or Latin. The fourth year of graduate study is ordinarily spent working on the doctoral dissertation.

Faculty Roaster

Professor Brodbeck, BAS,MA,PhD: associate professor emeritus Bergman; associate professors Adkins, Commins, Duerringer, Gram; assist ants professors Pater, Fumerton, Osuna, Temkin.

Courses

Freshmen and Sophomores Only

26:111 Elementary Ethics

Trends of thought and methods of argument in moral and social issues. Both seminar.

26:122 Elementary Logic

Elementary study of and literal meaning. Both seminar.

26:183 Elementary Political Philosophy

Elementary philosophical study of law, government and the state. Both seminar.

26:187 Problems of Mind and Matter

Elementary study of metaphysics and epistemology. Both seminar.

Undergraduates Only

26:233 Philosophy of Man

Trends major philosophical theories of man and society from Plato to present. Same as Com 11:33.

26:34 Philosophy of Art

Philosophical considerations of impact of works to develop scientific thought on man's concept of beauty. Same as Com 11:54.

Undergraduates and Graduates

(Not open to freshmen)

26:101 Introduction to Philosophy

Analytical and historical introduction stressing fundamental issues and arguments.

26:102 Introduction to Ethics

Analytical and historical introduction to ethical theory.

26:104 Introduction to Philosophy of Science

Main ideas and basic techniques of science.

26:111 Ancient Philosophy

Main ideas and major figures such as Plato and Aristotle.

26:112 Medieval Philosophy

Main ideas and major figures such as Augustine and Aquinas.

26:113 Early Modern Philosophy

Main ideas and major figures from Descartes to Kant.

26:114 Recent and Contemporary Philosophy

Main ideas and major figures of 19th, 20th centuries.

26:172 17th-Century Philosophy

Main ideas and major figures of 17th-century philosophy.

26:120 American Philosophy

Main ideas and major figures in American philosophy.

26:121 Aesthetics

Major problems in philosophy of art.

26:123 Political Philosophy

Major problems in political philosophy.

26:125 Philosophy of History

Major problems in philosophy of history.

26:126 Philosophy of Religion

Major problems in philosophy of religion.

26:128 Philosophy of Law

Major problems in philosophy of law.

26:141 Judges-Rights Philosophy

Main ideas of statements, ensuring Kierkegaard, Nietzsche and Marx.

26:142 Philosophy of Literature

Philosophical treatment of foundations of literary criticism.

26:181 Analytic Philosophy

Current problems and contemporary topics in metaphysics and epistemology. Prerequisites: consent of instructor.

26:182 Analytic Ethics

Selected topics in contemporary ethical thought. Prerequisite: 26:102 or consent of instructor.

26:183 Linguistic Analysis

Philosophical and historical introduction to language philosophy. Prerequisite: consent of instructor. Same as Language 102:553.

26:184 History of British

Selected topics in history of philosophical thought. Prerequisite: consent of instructor.

26:170 Pre-Socratic Philosophy

Analysis of main ideas and major texts. Prerequisites: 26:111 or consent of instructor.
36:171 Plato
Analysis of main ideas and major texts. Prerequisite: 26:111 or consent of instruc-
tor. 3 a.h.
36:172 Aristotle
Analysis of main ideas and major texts. Prerequisite: 26:111 or consent of instruc-
tor. 3 a.h.
36:173 Post-Aristotelian Philosophy
Analysis of main ideas and major texts. Prerequisite: 26:111 or consent of instruc-
tor. 3 a.h.
36:176 Augustine, Boethius and Ockham
Analysis of main ideas and major texts. Prerequisite: 26:112 or consent of instruc-
tor. 3 a.h.
36:177 Descartes
Analysis of main ideas and major texts. Prerequisite: 26:113 or consent of instruc-
tor. 3 a.h.
36:180 Nietzsche and Leibnitz
Analysis of main ideas and major texts. Prerequisite: 26:113 or consent of instruc-
tor. 3 a.h.
36:181 Lonk
Analysis of main ideas and major texts. Prerequisite: 26:115 or consent of instruc-
tor. 3 a.h.
36:185 Kant I
Analysis of main ideas and major texts. Prerequisite: 26:113 or consent of instruc-
tor. 3 a.h.
36:186 Kant II
Analysis of main ideas and major texts. Prerequisite: 26:113 or consent of instruc-
tor. 3 a.h.
36:187 Hume, Schelling and Hegel
Analysis of main ideas and major texts. Prerequisite: 26:113 or consent of instruc-
tor. 3 a.h.
36:188 Brentano, Meinong and Husserl
Analysis of main ideas and major texts. Prerequisite: 26:113 or consent of instruc-
tor. 3 a.h.
36:191 Mathematical Logic
Main ideas and techniques of mathematical logic. Prerequisite: consent of instruc-
tor. 3 a.h.
36:195 Honors in Philosophy
May be repeated to maximum of 6 a.h. 3 a.h.

Courses Primary for Graduates
36:200 Philosophical Problems of the Social Sciences
Ethics and understanding, theories and methods, value and ideology, freewill and causality. Same as Psychology 31:224. 3 a.h.
36:205 History and System of Psychology
Personalization, humanization, social psychology, behaviorism, Gestalt and psychodynamic, Sane as Psychology 21:332. 3 a.h.
36:206 Philosophy of Science
Major topics in the philosophy of science. 3 a.h.
36:211 Seminar: Ontology
May be repeated for credit. 3 a.h.
36:212 Seminar: Epistemology
May be repeated for credit. 3 a.h.
36:213 Seminar: Philosophical Analysis
May be repeated for credit. 3 a.h.
36:214 Seminar: Philosophy of Logic
May be repeated for credit. 3 a.h.
36:215 Seminar: Philosophy of Science
May be repeated for credit. 3 a.h.
36:216 Seminar: Ethics
May be repeated for credit. 3 a.h.
36:217 Seminar: History of Ancient Philosophy
May be repeated for credit. 3 a.h.

36:226 Seminar: History of Medieval Philosophy
May be repeated for credit. 3 a.h.
36:227 Seminar: History of British Philosophy
May be repeated for credit. 3 a.h.
36:228 Seminar: History of Continental Philosophy
May be repeated for credit. 3 a.h.
36:251 Research: Value Theory
May be repeated for credit. 3 a.h.
36:257 Research: Metaphysics
May be repeated for credit. 3 a.h.
36:258 Research: Logic and Epistemology
May be repeated for credit. 3 a.h.
36:259 Research: History of Philosophy
May be repeated for credit. 3 a.h.

Physical Education for Men
Department Head: Louis E. Allen
Degree offered: B.A., B.S., M.A., Ph.D.

The University of Iowa Department of Physical Education for Men has earned national and international recognition as a cen-
ter of research in physical education and as a center for the de-
velopment of outstanding educators and athletic coaches. The graduate program, in particular, has long been re-
nowned as one of the outstanding programs in physical
education in the world.

Undergraduate Programs
Preparation for Teaching and Coaching
This bachelor of science degree program in teaching and coach-
ing prepares students for teaching physical education and related
subjects in elementary and secondary schools and for the coach-
ing of athletic teams. Though the recent job shortage in teaching
and coaching has led to a high level of competition among ap-
plicants for teaching positions, University of Iowa graduates in
physical education have had a high percentage of placement.
Program requirements:

27:31, 22
Teaching of Recreational Sports I, II
27:31
Teaching of Gymnastics
One of these seven coaching courses:
27:32
Coaching of Track and Field Athletics
27:33
Coaching of Baseball
27:34
Coaching of Track and Field Athletics
27:35
Coaching of Baseball
27:36
Coaching of Track and Field Athletics
27:37
Coaching of Baseball
27:38
Coaching of Competitive Swimming
27:39
Coaching of Track and Field Athletics
27:48
Coaching of Baseball
27:59
Coaching of Track and Field Athletics
27:76
Teaching of Swimming
27:53
Coaching of Track and Field Athletics
27:57
First Aid and Athletic Training
27:103
Administration of Physical Education and Athletics
27:103
Adapted Physical Education
27:107
Biology of Physical Education
27:108
Growth and Motor Performance
27:141
Elementary Exercise Physiology
Physical Education for Men

72:11 Introduction to Human Physiology
63:10 Health Science I

Courses required for certification in physical education:

76:71, 72 Methods and Materials in Elementary School Physical Education
or
27:30 Social Forms of Dance
75:73 Educational Psychology and Measurement
75:91 Pre-Education Practicum
75:100 Introduction to Secondary School Teaching
75:145 Methods in Secondary Physical Education
75:187 Seminar, Curriculum and Student Teaching
75:190 Individual Projects in Lab Practice (Student Coaching)
75:191 Observation and Laboratory Practice in the Secondary School
76:192 Laboratory Practice in Elementary School

Pre-Doctoral Program

The pre-doctoral Bachelor of Arts program, which is open only to students with superior academic records, is designed to prepare students for graduate work in physical education with emphasis on exercise physiology, adapted physical education, anatomy, biomechanics or evaluation and statistics. The curriculum consists of a core of courses in physical education and selected courses in mathematics, the biological sciences and the physical sciences which are basic to advanced study in the area in which the student is interested. Because the student need not meet certification requirements for teaching in the public schools, this curriculum offers considerable latitude in the selection of electives to fit individual interests and needs.

Foundation courses required for the pre-doctoral program include:

4:1 Principles of Chemistry I
4:4 Principles of Chemistry II
4:6 Elementary Chemistry Laboratory
4:131 Organic Chemistry I
22M:2 Mathematical Techniques I
22M:3 Mathematical Techniques II
22M:40 Elementary Functions
29:1, 2 College Physics

Professional courses in physical education and related areas required for the pre-doctoral program are:

27:11 Introduction to Physical Education
27:21, 22 Teaching of Recreational Sports I, II
27:53 Human Anatomy
27:97 Leadership Training I
27:105 Adapted Physical Education
79:75 Educational Psychology and Measurement
79:145 Methods in Secondary Physical Education
72:13 Introduction to Human Physiology
72:92 Exercise Physiology
99:129 The Chemistry of Biological Materials
99:130 Metabolism

Endorsement for Coaching

The State Department of Public Instruction has provided for the endorsement of certified teachers for the coaching of athletic teams in schools. This endorsement is intended for teachers who hold majors in subjects other than physical education but who wish to coach interscholastic athletic teams. The endorsement does not permit the teacher to teach physical education classes in the schools.

To be certified for coaching athletic teams at the secondary school level, the following courses must be satisfactorily completed:

27:53 Human Anatomy
27:57 First Aid and Athletic Training
27:103 Administration of Physical Education and Athletics
27:107 Biomechanics of Physical Education
27:108 Growth and Motor Performance
27:141 Elementary Exercise Physiology
78:192 Observation and Laboratory Practice in the Secondary School

*This course may be waived on the basis of appropriate experience as a coach.*

Endorsement for Athletic Trainers

This endorsement is provided for students who want to be certified as trainers for athletic teams at either the secondary school level as a part of their regular teaching duties or the college and university level. The courses required for certification are designed to meet the standards of the National Athletic Trainers Association and include:

17:41 Contemporary Nutrition
17:142 Nutrition
31:1 Elementary Psychology
75:75 Educational Psychology and Measurement
72:13 Introduction to Human Physiology
63:101 Health Science I
27:53 Human Anatomy
27:57 First Aid and Athletic Training
27:105 Adapted Physical Education
27:107 Biomechanics of Physical Education
27:141 Elementary Exercise Physiology
27:171 Medical Supervision of Athletics
27:92 Diagnostic Techniques and Athletic Injuries
27:183 Athletic Training Modalities and Therapeutics
27:184 Laboratory Practice in Athletic Training

Pre-Physical Therapy Program

The pre-physical therapy program capitalizes on a unique juxtaposition of facilities at Iowa. Within a six-block radius are located the Field House, which houses the Department of Physical Education for Men, the College of Medicine, the University Hospital, the Veterans Hospital, the Hospital School for severely handicapped children, the Psychopathic Hospital and the Pine School for mentally retarded children.

The proximity of these facilities, together with the close working relationships between the physical education faculty and the faculties of various departments in the College of Med-
cine, offer an ideal setting for a pre-physical therapy program. Because there is a rapidly-increasing demand for physical therapists who are willing to serve as athletics trainers for school, college and university teams, the pre-physical therapy program in physical education renders a valuable service to schools and colleges, as well as to the physical aspects of physical therapy.

Students who wish to complete the requirements for admission to the training program in physical therapy must complete the following courses:

27:14, 22  Teaching of Recreational Sports I, II  
27:15  Teaching of Gymnastics  
27:17  Teaching of Swimming  
27:53  Human Anatomy  
27:57  First Aid and Athletic Training  
27:58, 59  Physiological in Special Physical Education  
27:103  Administration of Physical Education and Athletics  
27:105  Adapted Physical Education  
27:107  Biomechanics of Physical Education  
27:108  Growth and Motor Performance  
27:141  Elementary Exercise Physiology  
27:153  Advanced Anatomy and Kinesiology  
4:7, 8  General Chemistry I and II  
4:9  General Chemistry Laboratory  
7:97  Educational Psychology and Measurement  
29:1:  College Physics  
31:1  Elementary Psychology  
31:13  Psychology of Adjustment  
37:3  Principles of Animal Biology  
37:81  Principles of Human Genetics  
65:101  Health Science I  
72:13  Introduction to Human Physiology

Graduate Programs

M.A. Without Thesis

The program leading to the M.A. degree without thesis is designed as a terminal unit of advanced study for teachers of basic physical education, and for athletics coaches. Emphasis is placed on the application of research findings to the organization, teaching and evaluation of basic physical education programs for all students in schools and colleges, and to the coaching of intramural and interscholastic athletic teams. Particular attention is given to problems associated with teaching and coaching in public schools and community colleges in Iowa. The placement of graduates with the M.A. degree without thesis has been excellent.

Undergraduate prerequisites. The undergraduate coursework listed below is required. Any or all of this coursework may be taken after the student has been admitted to graduate study, but it should be taken at the earliest opportunity.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human anatomy</td>
<td>3</td>
</tr>
<tr>
<td>Human physiology</td>
<td>3</td>
</tr>
<tr>
<td>Personnel hygiene (or equivalent)</td>
<td>2</td>
</tr>
<tr>
<td>Administration of physical education and athletics</td>
<td>2</td>
</tr>
<tr>
<td>Methods in physical education</td>
<td>2</td>
</tr>
<tr>
<td>Practice teaching (or equivalent)</td>
<td>3</td>
</tr>
<tr>
<td>Theory and practice:</td>
<td></td>
</tr>
<tr>
<td>Teaching of gymnastics</td>
<td>1</td>
</tr>
<tr>
<td>Teaching of swimming</td>
<td>1</td>
</tr>
<tr>
<td>Electives in physical education and related areas</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
</tr>
</tbody>
</table>

Credit may be given for experience and competence in techniques when such competence is demonstrated by examination. Graduate requirements. For the M.A. degree without thesis, the student must complete a minimum of 30 semester hours, at least 24 of which must be in physical education. At least one course must be selected from each of the three groups below.

Group I

27:105 Adapted Physical Education (may not be elected if student has completed equivalent course in undergraduate study)  
27:167 Measurement and Evaluation in Physical Education

Group II

27:199 Supervision of Physical Education  
27:237 Public School Curriculum in Physical Education  
27:308 Motor Learning

Group III

27:157 Biomechanics of Athletics  
27:241 Scientific Principles of Physical Conditioning  
Required for all students:  
27:301 Non-thesis Seminar

M.A. with Thesis

The study program leading to the M.A. with thesis is designed for juniors as a first step in a program of graduate study leading to the Ph.D. degree. There is particular emphasis upon techniques of research as applied to problems related to physical education and athletics. A secondary purpose of this program is to provide advanced preparation for those who are teaching, or 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. It is an attempt to thoroughly acquire qualifications with the nature and extent of research in all areas of physical education. Undergraduate prerequisites. The undergraduate coursework listed below is required. Any or all of it may be taken after the student has been admitted to graduate study in physical education, but it should be taken at the earliest opportunity.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human physiology</td>
<td>3</td>
</tr>
<tr>
<td>Human anatomy</td>
<td>2</td>
</tr>
<tr>
<td>Methods in physical education</td>
<td>2</td>
</tr>
<tr>
<td>Administration of physical education and athletics</td>
<td>3</td>
</tr>
<tr>
<td>Intermediate algebra (or equivalent)</td>
<td>3</td>
</tr>
<tr>
<td>Teaching of recreational sports (or equivalent)</td>
<td>4</td>
</tr>
<tr>
<td>Practice teaching (or equivalent)</td>
<td>2</td>
</tr>
<tr>
<td>Electives in physical education and related areas</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
</tr>
</tbody>
</table>

a.b. (minimum)
In addition to the course, undergraduate courses in chemistry, physics, biology, mathematics, and the physiology of exercise, are highly desirable and may be included as electives in related areas.

Graduate requirements. The courses listed below, together with elective courses sufficient to total 30 semester hours in physical education and related areas, are required for the M.A. degree with a thesis.

27:205 Adapted Physical Education: Special Topics and Research
(Students who have not completed 27:105 Adapted Physical Education, or equivalent, will elect 21:105)
27:247 Biomechanics of Human Motion
21:267 Advanced Measurement and Evaluation in Physical Education
27:112 Seminar: Research in Motor Learning
27:320 Seminar: Research in Physical Education Curriculum
27:401 Seminar: Thesis I
(Required during first 8 semester hours of graduate study)
27:402 Seminar: Thesis II
(Total credit for 27:401 and 27:402 may not exceed 5 semester hours; 27:402 must be taken in residence during the semester or summer session in which the thesis is being completed)
72:102 Exercise Physiology
79:143 Introduction to Statistical Methods
or
63:161 Statistical Methods in the Biomedical Sciences
Electives

Ph.D. Program

The Ph. D. program in physical education is based on the concept that the successful candidate should have a broad knowledge of all areas of physical education, a working knowledge of the research techniques which may appropriately be applied in 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 are physical education, adapted physical education, administration and supervision in physical education, anatomy, biomechanics, curriculum in physical education, exercise physiology, measurement and evaluation in physical education, motor performance and performance in physical education and therapeutic recreation.

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 physical education faculty.

The candidate is required to complete a minimum of 30 semester hours of graduate work in the specialization of his choice and to write a thesis on a problem in that area. The thesis must be submitted to a reputable journal for publication before the Ph.D. is granted. Most of the courses in the areas of specialization are offered by departments other than the Department of Physical Education for Men. Professors from these departments participate in writing and evaluating the comprehensive examinations, serve on thesis committees for the initial presentation of the proposed problem and participate in the final examination in which the candidate defends his thesis. In addition to writing a comprehensive examination in physical education, the candidate specializing in exercise physiology writes a comprehensive examination prepared and evaluated by faculty members in the Department of Physiology and Biophysics in the College of Medicine. Such candidates graduate with minors in physiology. Graduates of the Ph.D. program in physical education have obtained excellent positions in highly reputable colleges and universities throughout the United States and in a number of foreign countries.

Requirements. Completion of the requirements for the M.A. degree with a thesis is required. Any or all of these requirements may be completed after the student has been admitted to graduate work in physical education, but they should be completed at the earliest opportunity; if the student has the M.A. degree without thesis, he must complete the equivalent of the M.A. thesis before taking the comprehensive examination for the Ph.D. degree.

Requirements. The student must complete the core requirements and the requirements for at least one area of specialization.

The core requirements include:
79:24 Selected Applications of Statistical Techniques
or
71:208 Biometrics and Bioassay
or
63:161 Statistical Methods in the Biomedical Sciences
27:403-406 Seminar: Thesis III-IV

The foreign language requirement differs for each area of specialization. All candidates are not required to demonstrate proficiency in a foreign language in order to satisfactorily complete 27:236 Digital Processing or 22:110 Introduction to Computing with FORTRAN and 22:117. Comparing with P.L. Students specializing in motor performance and learning must also complete 225:158 Design and Analysis of Experiments.

The courses required by area of specialization are:

Adapted Physical Education
79:130 Exceptional Children
27:201 Research (may be repeated)
27:205 Adapted Physical Education: Special Topics and Research
60:199 Human Anatomy
60:119 Human Anatomy and Neuroanatomy

Administration and Supervision in Physical Education
27:219 Special Problems in Physical Education
70:201 Foundations of School Administration
27:201 Research
27:203 Psychology of Sport
or
27:160 Sociology of Sport
27:207 Administrative Principles of Physical Education
27:227 Advanced Administration of Athletics
27:340 Professional Preparation in Physical Education
Anatomy
60:103 Gross Human Anatomy for Medical Students.
or
60:109 Human Anatomy
60:110 Human Anatomy and Neuroanatomy
60:105 Microscopic Anatomy for Medical Students
or
37:112 Cell, Tissue and Organ Biology
37:102 Principles of Modern Embryology
27:153 Advanced Anatomy and Kinesiology

Biomechanics
59:202 Readings in Mechanics
Dynamics
Mechanics of Fluids and Transfer Processes
Stability of Deformable Bodies
3:130 Fundamentals of Laboratory Instrumentation
60:109 Human Anatomy
27:357 Research Techniques in Biomechanics

Curriculum in Physical Education
76:300 Elementary Curriculum
or
76:301 Secondary School Curriculum
79:332 Seminar: Educational Psychology II; Psychology
of Learning
7X:301 Current Issues in Education
27:160 Sociology of Sport
27:201 Research (may be repeated)
27:240 Professional Preparation in Physical Education
27:338 Seminar: Models and Theory in Curriculum

Exercise Physiology
72:202 Advanced Exercise Physiology
72:152 Mammalian Physiology
99:130 Metabolism

Measurement and Evaluation
22C:100 Introduction to Computing with FORTRAN
79:243, 244 Intermediate Statistical Methods; Correlation
Methods
or
22S:153, 154 Introduction to Mathematical Statistics I and
II
7P:246 Design of Experiments
7P:150 Educational Measurement for the Classroom
Teacher
27:367 Seminar: Research in Measurement and Evalua-
tion in Physical Education (may be repeated)

Motor Performance and Learning
27:201 Research (may be repeated)
27:314 Learning and Performance of Motor Skills Lab-
oratory
31:101 Social Psychology
31:123 Psychology of Learning
31:132 Motivation
31:141 Individual Differences
31:223 Information Processing in Psychology

Therapeutics
59:202 Readings in Mechanics
72:110 Neurology and Behavior
102:327 Research in Therapeutics

Admission Requirements
M.A. with or without Thesis
For admission to the program leading to the M.A. degree with or without thesis, the following requirements must be completed:
- A college degree from a regionally accredited institution
- A minimum of 30 credit hours in liberal arts, humanities, social sciences, or related fields
- A minimum GPA of 3.0

Ph.D. Program
The student must complete one internship or independent study leading to the Ph.D. degree. Students must complete the following:
- 20 credit hours in research methodology
- A minimum of 30 credit hours in advanced coursework

Facilities
The program includes the following facilities:
- A modern research laboratory
- A well-equipped gymnasium
- A comprehensive library
- A computer lab

The Faculty
The faculty includes the following members:
- Dr. John Smith (Professor of Anatomy)
- Dr. Jane Doe (Professor of Biomechanics)
- Dr. Mark Johnson (Professor of Exercise Physiology)

Faculty Roger
The faculty includes the following members:
- Professor Alice Green (Associate Professor of Anatomy)
- Professor Bob Brown (Associate Professor of Biomechanics)
- Professor Carol White (Associate Professor of Exercise Physiology)
Maynard, McCabe; associate professor emeriti Beebe, Raffensberger; instructors Crowley, Staben; instructors (coaching) Banks, Crenshaw, Knaulmeier, Roberts, Schmidt, Wynn.

*Department of Athletics.

Courses

Primary for Undergraduates

27:7 Elective Physical Education 1 a.h.

Open to students who have satisfied requirements for physical education skills or "Basic Skills.

27:15 Elective Physical Education

Continuation of 27:1.

27:16 Elective Physical Education

Continuation of 27:1.

27:17 Elective Physical Education

Continuation of 27:1.

27:18 Elective Physical Education

Continuation of 27:1.

27:19 Elective Physical Education

Open to any student who does not wish academic credit or who desires to extend a class for only enrollment for amusement.

27:11 Introduction to Physical Education 3 a.h.

Orientation lecture on historical and educational aspects of physical education

27:20 Junior Level Games 1.5 h.

Same as Physical Education for Women 25:20.

25:21 Teaching of Recreational Sports 2 a.h.

Teach methods and techniques of teaching and organizing groups for recreation.

27:25 Teaching of Recreational Sports I 1 a.h.

Continuation of 25:21.

27:21 Teaching of Gymnastics 2 a.h.

Teaching techniques of conditioning exercises, apparatus exercises and teaching exercises.

27:23 Coaching of Gymnastics 2 a.h.

Prerequisites: high school varsity experience or equivalent.

27:38 Coaching of Football 2 a.h.

Prerequisites: high school varsity experience or equivalent.

27:39 Coaching of Basketball 2 a.h.

Prerequisites: high school varsity experience or equivalent.

27:39 Coaching of Track and Field Athletics 2 a.h.

Prerequisites: high school varsity experience or equivalent.

27:30 Coaching of Softball 2 a.h.

Prerequisites: high school varsity experience or equivalent.

27:37 Coaching of Bowling 3 a.h.

Prerequisites: high school varsity experience or equivalent.

27:38 Coaching of Competitive Swimming 2 a.h.

Prerequisites: high school varsity experience or equivalent.

27:38 Coaching of Wrestling 2 a.h.

Prerequisites: high school varsity experience or equivalent.

27:38 Coaching of Tennis 2 a.h.

Prerequisites: high school varsity experience or equivalent.

27:38 Coaching of Field Hockey, Basketball and Baseball 2 a.h.

Prerequisites: high school varsity experience or equivalent.

27:38 Administration of Interscholastic Athletics 2 a.h.

27:90 Human Anatomy 2 a.h.

27:91 First Aid and Athletic Training 2 a.h.

Prerequisite: 27:93.

27:92 Practicum in Special Physical Education 2 a.h.

Laboratory experience in school physical education, exercise therapy and corrective therapies.

Prerequisites: Physiology and anatomy 26:13 and 27:52.

27:93 Practicum in Special Physical Education 2 a.h.

Continuation of 27:92.

27:94 Supervision of Interscholastic Athletics 2 a.h.

Prerequisites: 27:92 and 27:93.

Counselor supervisor before registration.

27:95 Supervision of Interscholastic Athletics 2 a.h.

Prerequisites: 27:94 and 27:93.

27:96 Leadership Training II 1 a.h.

Counselor supervisor before registration.

27:97 Leadership Training III 1 a.h.

Counselor supervisor before registration.

For Undergraduates and Graduates

27:103 Issues and Trends in Physical Education and Athletics 3 a.h.

27:103 Administration of Physical Education and Athletics 3 a.h.

27:103 Adapted Physical Education 2 a.h.

27:107 Biomechanics of Physical Education 2 a.h.

27:108 Growth and Motor Performance 2 a.h.

27:111 History of Physical Education 3 a.h.


27:131 Advanced Theory and Techniques of Swimming and Diving 2 a.h.

27:132 Advanced Theory and Technique of Gymnastics 1 a.h.

27:137 Physical Education Programs Seminar in Education 72:156.

27:141 Elementary Exercise Physiology 3 a.h.

Prerequisite: Physiology and Biophysics 72:141.

27:147 Knowledge and Performance Tests in Physical Education 2 a.h.

27:148 Elementary School Physical Education 2-3 a.h.


Prerequisites: Health and Physiology 27:153.


27:156 Classification of Human Physiology 3 a.h.

27:157 Biomechanics of Exercise 3 a.h.

27:158 Electromyography 3 a.h.

27:160 Physical Education for Elementary Schools 3 a.h.

Same as Education 72:242.

27:160 Sociology of Sport 3 a.h.


27:171 Medical Supervision of Athletics 3 a.h.

27:172 Diagnostic Techniques and Athletic Injuries 3 a.h.

27:173 Advanced Athletic Training Modalities and Therapeutics 3 a.h.

27:174 Laboratory Practice in Athletic Training 3 a.h.


Cours Primarily for Graduates

27:201 Research Arr.

Consult Department head before registration.

27:203 Physiology of Sport 3 a.h.


27:201 Advanced Administration of Physical Education 3 a.h.
Physical Education for Women

Department Head: Margaret G. Fox
Degrees offered: B.S., B.S.E., M.A., Ph.D.

Physical education is a recognized profession for women, a pro-

fession which is becoming more and more varied in today's so-
ciety. Elementary schools frequently hire the physical education
specialist to work in one or more schools in a city system. The

significance of motor experience is being recognized so that
both pre-school and elementary-school-age children are receiv-
ing aid from physical-education-trained personnel in their play
activities and in planned developmental programs in minor
skills.

At the secondary level the physical education teacher deals
with a variety of activities, many of a recreational value with
potential for lifetime 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 fol-
low their own preferences and to experience the joy of move-
ment and self-identity in sport accomplishment. The teacher
of physical education is a chaperone and guide in such learning.

When the physical-education-trained woman assumes the role
of mother and community leader, she has the benefit of knowl-
edge about children, their development, interests and activity
needs.

Undergraduate Curriculum
The Department of Physical Education for Women provides pro-

fessional education in four curricula: teaching physical educa-
dation, dance, coaching, and pre-physical therapy. The dance cur-
culum may be oriented to dance teaching or to the arts, de-
pending upon subject. Graduates of the Department enter
teaching positions in physical education, coaching, 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 theory 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
permit advanced work in twenty activities, so that the student is
preparation for advanced skills in that area or to go
into coaching in a particular sport. If she chooses the sport she
may have coursework and practical experience in coaching a particular sport.

Theoretical backgrounds are provided through anatomical, kine-

The student who plans to teach must meet certification re-

requirements (see "College of Education"). The teaching curricu-

lum leads to either the B.S. degree or the B.S. degree; the

physical therapy curriculum leads to a B.S. degree. The non-profes-
sional and dance curricula lead to the B.S. degree. Each student
must make application not later than the sophomore year for de-
partmental recommendation to the College of Education and
professional education courses, as well as continuation in the
physical education curriculum she has elected. Any student fail-
ing to maintain a grade-point average of 2.5, or having dis-
played marked inadequacies for teaching or a leadership role,
may be dropped from the program. The student must con-
form to one of these programs and be subject to all the requirements for
students starting in the program.
The pre-physical therapy curriculum is modeled after the basic science program with electives in physical education. It is designed to prepare students for admission to graduate programs in physical therapy.

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, now as a preparation for a career but as a broad acquaintance with material relevant to personal and family recreation and healthful living. Each student's program is individually planned with an advisor following broad guidelines and oriented to the student's objectives in selecting this major.

Physical Education Teaching Curriculum

28.1, 2, 3, 4, 21, 22, 23, 24 Techniques, or Equivalent experience 12-20 s.h.

28.10 Orientation 3 s.h.
28.20 Social Forms of Dance 1-2 s.h.
28.25, 26 Teaching of Sports 4 s.h.
28.27 Teaching of Social Forms of Dance 1-2 s.h.
28.28 Teaching Dance 1-2 s.h.
28.31, 32 Officer Training 2 s.h.
28.37 First Aid (or Red Cross certification) 3 s.h.
28.80 Anatomy 4 s.h.
28.81 Kinesiology 3 s.h.
28.106 Physiological Implications for Physical Education 3 s.h.
28.107 Correctives 3 s.h.
28.113 Measurement 2 s.h.
28.120 Organization and Administration of Physical Education 2 s.h.
28.21 History of Physical Education 1-2 s.h.
28.142 Interrelationships of Health and Physical Education 3 s.h.
70.71, 72 Methods and Materials in Elementary School Physical Education 4 s.h.
75.146 Methods and Principles of Physical Education 3 s.h.
75.190 Independent Projects in Laboratory Practice 2-3 s.h.
75.191 Observation and Laboratory Practice in Secondary School 6 s.h.
78.192 Laboratory Practice in Elementary School 6 s.h.

For certification requirements in education see "College of Education." For the general requirements of the College of Liberal Arts, see "College of Liberal Arts."

Curriculum Leading to Endorsement in Coaching for Women

28.14 Coaching for Women's Sports 2 s.h.
28.218 Advanced Coaching 2 s.h.
28.25, 26 Teaching of Sports 2-4 s.h.
28.31, 32 Officer Training 1-2 s.h.
28.109 Coaching 1-4 s.h.
28.80 Anatomy 3-4 s.h.
28.81 Kinesiology 3 s.h.
28.105 Care of Athletic Injuries 2 s.h.
28.106 Physiological Implications for Teaching Physical Education 3 s.h.
28.241 Scientific Basis of Physical Education 3 s.h.
28.108 Principles of Administration of Intercollegiates for Women 2 s.h.
28.120 Organization and Administration of Physical Education 2 s.h.
28.190 Principles and Administration of Intercollegiates for Women 2 s.h.
75.190 Individual Projects in Laboratory Practice 2-3 s.h.

Electives:
28.37 First Aid 3 s.h.
28.102 Research in Women's Sports 2-3 s.h.
28.119 Methods and Principles of Physical Education 3 s.h.
28.142 Interrelationships of Health and Physical Education 3 s.h.
28.215 Analysis of Human Motion 3 s.h.
28.248 Sociology of Sports 3 s.h.
28.306 Biomechanics 2 s.h.
28.307 Video Inspection and Research in Physical Education 2 s.h.

*Courses open only to graduate students.

Dance Curriculum

28.6 Modern Dance 3-4 s.h.
28.8 Intermediate Modern Dance 3-4 s.h.
28.9, 10 Ballet 2 s.h.
28.35, 36 Advanced Modern Dance 4 s.h.
28.112 Rhythmic Analysis of Dance 2 s.h.
28.129 Dance Accompaniment 2 s.h.
28.80 Anatomy 3 s.h.
28.81 Kinesiology 3 s.h.
28.114, 115 History and Appreciation of Dance 6 s.h.
28.123, 124 Beginning Composition 4 s.h.
28.171, 172 Dance Theatre 2 s.h.
28.177 Labanotation 3 s.h.

In addition to above, dance majors must select 15 hours from the following:
28.12, 13 Intermediate-Advanced Ballet 2-4 s.h.
28.20 Social Forms of Dance 2 s.h.
28.27 Teaching of Social Forms of Dance 1-2 s.h.
28.28 Teaching of Modern Dance 2-4 s.h.
28.111 Child's Dance 2 s.h.
28.116 Dance in Education 2 s.h.
28.127, 128 Dance Production 2-4 s.h.
28:170 Readings in Dance Arr.
28:173, 174 Advanced Choreaography 2-4 s.h.
28:176 Transportation 3 s.h.
28:181, 182 Dance Theatre 1-4 s.h.
*Required of all dance majors planning to teach. Also, 28:37 First Aid or Red Cross certification is required of all majors planning to teach. See "College of Education" for certification requirements for public school teaching.

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 in this field but as a broad acquaintance with material relevant to personal and family recreation and healthful living. Each student's program is planned with her advisor on the basis of the student's objectives. Basic courses for all in the non-professional major are:

28:1, 2, 5, 7, 21, 22 or equivalent experience 7-8 s.h.
28:37 First Aid 3 s.h.
104:61, 63, 65 3-4 s.h.
Supplementary courses of 20 to 24 semester hours may be elected to complete a major of 36 semester hours. These elective hours should be from the following fields: art, dramatic art, environmental health, home economics, music, physical education, psychology, recreation or sociology. At least 18 of the 36 semester hours must be 100 level courses.

Honors Program

The Honors Program is designed to serve the interests of the superior student. To be eligible for Honors, the student must have at least a B average at the beginning of the junior or senior year when Honors courses are taken, and must continue to maintain a B average throughout the remainder of her college career. This is an opportunity to gain some experiences in research and gain a perspective on certain aspects of graduate work.

Graduate Programs

Graduate work is offered in physical education, dance and recreation. Curricula lead to the M.A. in physical education, dance or recreation education and to the Ph.D. degree in physical education.

The curricula assume previous education in the respective fields. A program is planned, however, taking into account the student's 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 more than half century of graduate work there has been a growing philosophy of education for women and many of the graduates of these programs have stayed 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 pre-school and elementary school age children, statistics and research, and adaptive-individually planned programs. Others are possible. Occasionally an internship is possible in the specialization. The graduate student group is cooperative and international in make-up.

A research laboratory is available in the Women's Gymnasium. It is equipped primarily for kinesiological and biomechanical research and motor learning, including equipment for electromyographic research. Other needs may be met on a cooperative basis. Complete computer service is available as needed for research.

The Master of Arts Degree

The M.A. degree is awarded on completion of at least 30 semester hours of graduate work including thesis and in addition to adequate prerequisites for this degree. The curriculum may lead to teaching, administration, supervision in the schools or coaching certification.

Prerequisites

Background is required in anatomy, kinesiology, physiology, health education, methods in physical education, administration or physical education and physical education techniques.

General Field Requirements

*28:107 Corrections 3 s.h.
*28:113 Measurement 2 s.h.
*28:115 Methods and Principles of Physical Education 3 s.h.
*28:121 History of Physical Education 2 s.h.
28:205 Techniques of Research 3-4 s.h.
28:215 Analysis of Human Motion 3 s.h.
28:401 Thesis 4 s.h.
*Not required of those having similar undergraduate courses.

No more than 5 s.h. of these courses may be counted toward the M.A. degree.

Examinations

The remainder of the program is planned with the approval of the advisor and the head of the Department. In exceptional cases a student may be permitted to take a non-thesis M.A. Such a curriculum requires a minimum of 38 semester hours, a project instead of a thesis, and specified courses. Permission must be received from the graduate school of the Department and from the head of the Department.

The M.A. in Dance

The M.A. degree in dance is awarded on completion of at least 30 semester hours of graduate work including thesis. The curric-
Physical Education for Women

Electives

The remainder of the program is planned in light of individual needs, with the approval of the adviser and the head of the Department. The student may select the thesis requirement in some form of creative work, including production of a dance concert.

The Doctor of Philosophy Degree

The Ph.D. degree is awarded on completion of approximately 90 semester hours of graduate work, including general requirements for the master's degree and credit for the dissertation.

To be completed with a student's major in a related area, the dissertation should deal with some problem in the area of specialization (an additional 10 s.h.). The student is expected to declare the specialization by the time she writes the general comprehensive examination, and she must also write a comprehensive examination in the area of specialization. The area comprehensive examination may be taken only after writing the general comprehensive examination. The student is required to pass work in one or more allied fields. This may be done in the form of a minor of approximately 20 semester hours which will be planned jointly with the minor department, or it may be applied to the specialization area and other related areas.

Faculty

The faculty represents diversified backgrounds and specializations. Abilities and interest are complementary. Most faculty members hold advanced degrees. Several bring educational backgrounds from abroad. All are experienced teachers. Gradu- ate faculty members are experienced in research and writing and are available for the guidance of graduate students in their areas of specialization.

Facilities

Gymnasiums, dance studios, special exercise rooms and pools are used in the various programs in the Women's Gymnasium, North Hall, Burge dormitory, the Field House, the Recreation Building and the recreation area at the Memorial Union. The field for outdoor sports and hard surfaced tennis courts are near the Women's Gymnasium. The proximity of the river makes canoing instruction feasible on a regular class schedule. The archery range is located along the river in a rustic setting; out-
Physical Education for Women

Courses

Primarily for Undergraduates

28:1 Elective Physical Education 1 a.h.
Physical education majors only.
28:2 Elective Physical Education 1 a.h.
Physical education majors only.
28:3 Remedial Physical Education 3 a.h.
Physical education majors only.
28:4 Elective Physical Education 4 a.h.
Physical education majors only.
28:5 Intermediate Physical Education 3 a.h.
Elective, open to those who have completed requirement in physical education skills. May be repeated.
28:6 Modern Dance 1-2 a.h.
28:7 Advanced Physical Education 1 a.h.
Elective, open to those who have completed requirement in physical education skills. May be repeated.
28:8 Intermediate Modern Dance 1-2 a.h.
28:9 Ballet 1-2 a.h.
Open to those who have completed requirement in physical education skills.
28:10 Ballet 1-2 a.h.
Prerequisite: 28:9 or equivalent experience.
28:12 Intermediate Ballet 2 a.h.
Open to those who have completed 28:11 or equivalent.
28:13 Advanced Ballet 2 a.h.
Open to those who have completed 28:12 or equivalent.
28:14 Coaching Women’s Sports 2 a.h.
Prerequisites: bachelor’s degree in physical education and physiology of coaching.
28:15 Senior Life Saving and Water Safety Instructor’s Course 1-2 a.h.
A-20 Red Cross Senior Water Safety Certificate or Instructor’s Certificate. Registration after consultation with instructor.
28:19 Orientation 1 a.h.
28:20 Social Forms of Dance 1-2 a.h.
Foll., square, social dances. Same as Physical Education for Men 27:30.
28:21 Physical Education Techniques 3 a.h.
Sports and appliques.
28:22 Physical Education Techniques 3 a.h.
Gymnastics and sports techniques.
28:23 Physical Education Techniques 3 a.h.
Sports, aquatics, dance.
28:24 Physical Education Techniques 2-3 a.h.
Field, physical education.
28:26 Teaching of Sports 2 a.h.
Prerequisite: 28:24.
28:28 Teaching of Sports 2 a.h.
Continuation of 28:26; teaching of individual sports, excluding swimming.
28:29 Teaching of Social Forms of Dance 1-2 a.h.
Manners, methods, curriculum planning for dance in secondary schools.
28:29 Teaching of Modern Dance 2 a.h.
Teaching of modern dance in secondary schools and at college level.
28:30 Preparatory Physical Education 0 a.h.
Grad students only.
28:35 beach volleyball 1 a.h.
Originating techniques for team sports.
28:36 Cheerleading 1 a.h.
May follow 28:35 or 28:31 or take as independent work.
28:38 Advanced Modern Dance 2 a.h.
Practical study of dance techniques. Prerequisites: two semesters of dance or equivalent.
28:39 Advanced Modern Dance 2 a.h.
Continuation of 28:38. May not be taken as independent work.
28:42 First Aid 3 a.h.
Standard and advanced Red Cross courses; leads to first aid certification on completion of requirements.
28:46 Weight Control 2 a.h.
Preparatory course for instructor.
28:71 Methods and Materials in Elementary School Physical Education 2 a.h.
Same as Education 76:71. Physical education majors only.
28:72 Methods and Materials in Elementary School Physical Education 2 a.h.
Evaluation of dance in school programs; continuation of 28:71. Same as Education 76:72. Physical education majors only.
28:80 Anatomy 2 a.h.
Required of all students majoring in physical education; general human anatomy, with emphasis on future influencing movement.
28:81 Kinesiology 3 a.h.
Mechanics of human movement and analysis of movement skills. Prerequisites: 28:46, 28:42.
28:83 Independent Study 1 a.h.
28:92 Honors Readings 3 a.h.
28:94 Honors Project 3 a.h.
28:96 Honors Seminar 3 a.h.
28:96 Readings in Kinesiology 3 a.h.

For Undergraduates and Graduates

28:191 Fitness for the Individual 3 a.h.
Fitness of youth and adults, physiological process of conditioning.
28:125 Research on Women in Sports 3-4 a.h.
Review of research completed, and planning for research needed relative to women’s role in competitive sports.
28:126 Health Education Workshop 1-2 a.h.
28:128 Five of Athletic Injuries 2 a.h.
Immediate first aid and rehabilitative treatment of injuries occurring in women’s sports.
28:108 Physiological implications for Teaching Physical Education 3-3 a.h.
Physiological effects of exercise and lack of exercise, methods of conditioning for various exercise programs.
28:127 Exercise Physiology 3-3 a.h.
Mechanics of posture and common abnormalities of spine and feet; mental work for facultative conditions and athletic injuries. Prerequisites 28:90 and 28:81 or equivalents.
28:106 Principles and Administration of Intercollegiate Women 2 a.h.
Course of intercollegiates designed to provide educational values to participants. Prerequisites 28:90 and 28:91 or equivalents.
28:107 Coaching 1 a.h.
Soccer field, coaching techniques appropriate in intercollegiate sports for skilled players. Analysis and coaching techniques pertinent in coaching.
28:110 Workshop Methods of Teaching Sports 1-4 a.h.
Selected sports and the teaching of each for beginners as well as for the more skilled; adaptation in different age levels; presented in workshop form by experienced teachers.
28:111 Children’s Dance 2 a.h.
Dance for children of pre-school to high school age.
28:172 Physiological Analysis of Dance 3 a.h.
Analysis and variation of rhythm, movement and the composition of performance areas.
28:173 Measurement 2 a.h.
Selection and administration of physical measurements and motor tests; use of data.
28:114 History and Appreciation of Dance 3 a.h.
Origins and development of dance; emphasis on changing forms and functions of dance in many cultures; historical survey of dance in non-Western art.
28:115 History and Appreciation of Dance 3 a.h.
Continued.
28:116 Dance in Education 3 a.h.
Adaptation of dance forms to suit different levels of elementary and secondary grades; reading, discussion, laboratory seminars.
Physiological and sociological bases of works; technique of progressive and differential instruction; implications for education, skills and efficiency of motor performances.
28:118 Teaching of Synaesthetic Movement 3 a.h.
28:119 Methods and Principles of Physical Education 3 a.h.
Philosophical bases of teaching and learning. Same as Education 70:146.
28:120 Organization and Administration of Physical Education 2 a.h.
28:121 History of Physical Education 1-3 a.h.
28:122 Beginning Composition 3 a.h.
Introduction to processes of creating dances.
28:123 Beginning Composition 2 a.h.
Continuation of 28:122.
28:127 Dance Production 2 a.h.
The organization and procedures of all phases of dance production.
28:128 Dance Production 2 a.h.
Continuation of 28:127.
28:129 Dance Apprenticeship 2 a.h.
An overview of the professional dance career; analysis of access for dance majors of unusual accomplishment.
28:130 Extracurricular Programs in Physical Education in High School 2 a.h.
Same as School Board 70:146.
28:143 Interrelationships of Health and Physical Education 4 a.h.
Physical education and recreation programs in schools as related to health of youth in today's society.
28:144 Health Problems of Youth 1 a.h.
Workshop in health problems.
28:145 Elementary School Physical Education 3-4 a.h.
Materials, methods, curricula-planning responsibilities for improving performance skills at all grade levels, as well as for teaching experience; primary for elementary school teachers.
28:150 Movement Education 1-2 a.h.
A professional level course in methods of fundamental movements, rhythm and activities included in elementary school physical education programs.
28:151 Student Leadership in Extracurricular Activities 2 a.h.
Philosophical approach to programming and conduct of sports programs.
28:160 Workshop: Elementary Physical Education 1 a.h.
28:175 Readings in Dance 1 a.h.
By permission only.
28:176 Dance Theatre 3 a.h.
Experience in performing groups.
28:177 Dance Theatre 3 a.h.
By permission only.
28:178 Advanced Choreography 2 a.h.
Experience in choreographing both group and solo numbers. Prerequisites: 28:112, 124, 146, 185.
28:179 Advanced Choreography 2 a.h.
Continuation of 28:178. Required of all seniors as applied to dance. Plan to present day.
28:180 Theory and Criticism of Dance 3 a.h.
28:181 Laboratory 3 a.h.
Theory and practice in motion of movement.
28:179 Labanotation 3 a.h.
Prerequisite: 28:177 or equivalent.
28:181 Dance Theatre 1-2 a.h.
Participation in current work.
28:182 Dance Theatre 1-2 a.h.
Participation in current work.

Primary for Graduates

28:201 Problems in Physical Education 4 a.h.
Problems of instructor.
28:203 Seminar: Current Issues 2, 4 a.h.
Problems in physical education and related areas.
28:200 Techniques of Research 3-4 a.h.
Selecting and defining a problem; methods and design of studies.
28:206 Projects 2-3 a.h.
Cooperative work in planning and conducting investigative projects.
28:207 Advanced Correlatives 3 a.h.
Organization and administration of corrective programs; practice in individualization of exercise programs; technique of evaluation. Prerequisite: 28:207 or equivalent.
28:208 Motor Learning for the Mentally Retarded 3 a.h.
Motor development and learning problems of educable and trainable mentally retarded children; development and measurement skills desirable.
28:209 intramural and Extramural Programs 3 a.h.
28:210 Design and Maintenance of Facilities 3 a.h.
Design, layout, construction, maintenance of physical education facilities and sites.
28:211 Seminar in Evaluation 3 a.h.
28:212 Analysis of Human Motion 3 a.h.
Advanced biomechanical study with application to teaching methods and problems in sports, dance, body mechanics, conditioning.
28:218 Advanced Coaching 3 a.h.
Reaching and discussion concerning coaching and officiating procedures in light of research and recent developments in women's sports.
28:219 Administration in Physical Education 3 a.h.
Prerequisite: consent of instructor (Ph.D., candidates only).
28:220 Motor Development of Children 3 a.h.
Neuromuscular patterns of growth related to motor learning.
28:241 School Bureaus of Physical Education 3 a.h.
28:243 Seminars: Interrelationships of Physical Education and Health 3 a.h.
Health and safety aspects of physical education; research on health education, current practices, links and interconnections with counseling agencies, weight control and school and public fitness programs.
28:244 Philosophical Issues of Curriculum Construction 3 a.h.
28:245 Seminar: Physical Education Program Planning and using opportunities in physical education for teaching of health.
28:246 Supervision of Physical Education Programs 3 a.h.
28:246 Seminar: Supervision 1 a.h.
28:273 Seminars in Supervision, open only to those with experience in supervision.
28:274 Philosophy of Physical Education 3 a.h.
28:275 Sociology of Sports 2-3 a.h.
Roles and meaning of organized sports and individual games participation in private and commercial cultures.
28:276 Seminar: Improvement of Instruction in Elementary School Physical Education 3 a.h.
28:250 Seminar: Current Developments in Physical Education 3 a.h.
28:251 Comparative Physical Education 3 a.h.
Comparisons of other programs and physical education around the world.
28:252 Individual Differences in Activity Classes 3 a.h.
Identification of activity curriculum to accommodate individual student needs; includes discussion on four cases in existing methods of teaching for low-rear status individuals and the physically disabled.
28:256 Professional Writing 3 a.h.
Critical review of physical education and related writing of all types; individual projects on writing for publication or presentation at professional meetings.
28:280 Physical Education Program Planning 3 a.h.
Curriculum design for the high school girl.

Physical Education for Women
Physical Therapy

Program Director: Gary L. Smith
Degree offered: professional certificate B.S., M.A., Ph.D.

Physical therapy offers a wide variety of opportunities for professional practice in general or specialized hospitals, programs for crippled children, physicians' offices and physical therapy clinics, extended care facilities, nursing homes, community and governmental agencies, rehabilitation centers, the armed forces, foreign service and athletic departments. Additional career opportunities are available for teaching in educational programs of physical therapy and related professions.

Physical therapists participate in the evaluation of the capabilities and disabilities of patients. They administer treatment to alleviate pain, correct or minimize deformity and improve the general health status of the individual, and they teach the patient, the patient's family or other personnel the appropriate procedures for the patient's continuing care. They are also involved in the administration of physical therapy facilities, the supervision of supportive personnel and consultation with other health professionals.

Professional Program

The physical therapy program at The University of Iowa is fully accredited by the American Physical Therapy Association and the Council on Medical Education of the American Medical Association. Satisfactory completion of the curriculum qualifies candidates for the Professional Examination Service (P.E.S.) test for licensure in Iowa and most other states.

The two-year professional certification program consists of:

**Semester I**
- 60:109 Human Anatomy 4 s.h.
- 72:151 Intermediate Physiology 5 s.h.
- 101:115 Kinesiology 3 s.h.
- 101:131 Therapeutic Physical Agents 3 s.h.
- 101:141 Professional Orientation and Administration 2 s.h.

**Semester II**
- 60:110 Human Anatomy and Neuroanatomy 4 s.h.
- 69:203 Principles of Human Pathology 2 s.h.
- 101:110 Therapeutic Exercise I 4 s.h.
- 101:118 Clinical Observation 2 s.h.
- 101:122 Emotional Aspects of Disability 2 s.h.
- 101:190 Electrotherapy 3 s.h.

**Semester III**
- 228:101 Biostatistics 2-3 s.h.
- 101:101 Introduction to Clinical Medicine for Physical Therapy 4 s.h.
- 101:102 Fundamentals of Orthopedics 4 s.h.
- 101:106 Clinical Sciences 4 s.h.
- 101:111 Therapeutic Exercise II 4 s.h.
- 101:113 Principles of Neurology 2 s.h.
- 101:119 Clinical Education and Rehabilitation 4 s.h.

**Semester IV**
- 101:120 Clinical Internship 4 s.h.

Admission to the Professional Program

A new class is admitted each fall. Students may enter the program either following their junior year of college or after having earned a bachelor's degree. A student entering the program after his or her junior year of undergraduate study must be able to satisfy all requirements for the Bachelor of Science degree in general science by successfully completing the first year of the physical therapy program.

Undergraduate students who complete their preprofessional work at other colleges or universities must meet the general admission and graduation requirements of the College of Liberal Arts. They should consult with the University to plan their preprofessional studies to meet the requirements of the physical therapy program.

Regardless of academic preparation prior to admission, all students are enrolled in the same two-year professional curriculum leading to certification in physical therapy. To be considered for admission, the applicant should have:

- Completed at least 96 semester hours of college study, including a complete introductory course and one advanced course in biology (12 s.h.), a complete introductory course in chemistry (eight s.h.), a complete introductory course in physics (eight s.h.), a complete introductory course in psychology (six s.h.) and one college-level mathematics course (three s.h.); all science courses must be completed in the major department offering the course, and must include at least one-fourth laboratory instruction.
- A minimum overall grade-point average of 2.7 (A=4); a minimum grade-point of 2.7 in all courses in biology, chemistry, physics and psychology.

Graduate applicants must take the national Graduate Record Examination prior to admission. Undergraduates must take the GRE during the first year of professional training. Results of this examination must be mailed to The University of Iowa.

Applications must be submitted to the Director of Admissions, The University of Iowa. Personal interviews may be required. Applicants will be contacted for appointments if interviews are desired. The physical therapy admissions committee selects the applicants who appear to be best qualified for the study and practice of the profession.
Applications are accepted beginning September 1 for the following year. Prospective students are urged to apply as early as possible. The closing date is February 1.

Master of Arts

The four major components of the Master of Arts degree program in physical therapy are the acquisition of problem-solving tools; learning advanced techniques in evaluation of neurological disorders, electrodiagnosis and biomechanics; learning communication skills in teaching and administration; and a problem-solving practicum. The program is sufficiently flexible to accommodate elective pursuits commensurate with the student's ability and interest.

Program Requirements

The program requires 30 semester hours of graduate work beyond the professional certification. It also requires a thesis.

**Required Courses**

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Semester Hours</th>
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</thead>
<tbody>
<tr>
<td>63:161</td>
<td>Statistical Methods in the Biomedical Sciences</td>
<td>3</td>
</tr>
<tr>
<td>72:102</td>
<td>Exercise Physiology</td>
<td>4</td>
</tr>
<tr>
<td>27:241</td>
<td>Scientific Principles of Physical Conditioning</td>
<td>3</td>
</tr>
<tr>
<td>101:213</td>
<td>Principles of Human Motion</td>
<td>4</td>
</tr>
<tr>
<td>101:275</td>
<td>Evaluation of Selected Neurological Disorders</td>
<td>3</td>
</tr>
<tr>
<td>101:304</td>
<td>Analysis of Scientific Literature</td>
<td>2</td>
</tr>
</tbody>
</table>

**Recommended Courses**

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:120</td>
<td>Fundamentals of Laboratory Instrumentation</td>
<td>3</td>
</tr>
<tr>
<td>76:162</td>
<td>Learning Strategies for Health</td>
<td>3</td>
</tr>
<tr>
<td>76:248</td>
<td>Data Processing</td>
<td>3</td>
</tr>
<tr>
<td>76:101</td>
<td>Operation of Audiovisual Equipment</td>
<td>3</td>
</tr>
<tr>
<td>76:105</td>
<td>Selection and Utilization of Educational Media</td>
<td>3</td>
</tr>
<tr>
<td>27:312</td>
<td>Seminar: Research in Motor Learning</td>
<td>3</td>
</tr>
<tr>
<td>31:123</td>
<td>Psychology of Learning</td>
<td>3</td>
</tr>
<tr>
<td>101:280</td>
<td>Practice: Teaching Methods and Design</td>
<td>2</td>
</tr>
<tr>
<td>101:290</td>
<td>Advanced Electrotherapy and Electrodagnosis</td>
<td>2</td>
</tr>
<tr>
<td>101:325</td>
<td>Independent Study</td>
<td>3</td>
</tr>
</tbody>
</table>

**Elective Courses**

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>6A:114</td>
<td>Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>6A:130</td>
<td>Accounting for Management Analysis and Control</td>
<td>3</td>
</tr>
<tr>
<td>76:211</td>
<td>Problems in College Teaching</td>
<td>3</td>
</tr>
<tr>
<td>20:202</td>
<td>Readings in Mechanics</td>
<td>2-3</td>
</tr>
<tr>
<td>7U:139</td>
<td>Orientation to the Rehabilitation of the Handicapped Child</td>
<td>3</td>
</tr>
</tbody>
</table>

Personal associated with the program have access to the or-thopedic-biomechanics laboratories, and to the biomechanics laboratory in the College of Engineering. These laboratories are equipped with instrumentation—electrogoniometers, force transducers, high-speed cameras, motion analyzers, accelerometers and force tables—needed to solve problems of forces and motion associated with the human in the normal and abnormal states.

The master's degree program in physical therapy 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 integrated in terms of rehabilitation, staff conferences and consultation for patient care; and master's degree candidates have teaching practicum opportunities in the basic professional program.

Financial Support

Financial support is awarded to each student in the program.

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 admission requirements of the University of Iowa Graduate College and pass the professional examination for physical therapists.

Doctor of Philosophy Program

The University recently approved a Ph.D. program designed to produce professionals with advanced training for positions of leadership in physical therapy, and for positions in graduate and professional educational programs of physical therapy.

Faculty Roster

Professor Emeritus W. Paul; associate professor Smith; assistant professor McAninch, Barrie, Soderberg; assistant professor Emeritus Parr; clinical assistant professor D. Paul; instructor Danzibs; lecturer Soper.

Medical adviser for professional program Merlin P. Strumman; medical adviser for master's degree program Richard C. Johnson.

Consultants: professors Platt, Larson, Metcal (Anatomy), Miller, Paterson, King, Van Allen (Neurology); associate professor Andrews (Engineering), Holloway (Education), Tipton (Physiology); assistant professor Albright (Orthopedics), Maynard, Tomasson (Anatomy).

Courses

*Offered only by students in the professional program."

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>101:10</td>
<td>Introduction to Clinical Medicine for Physical Therapy</td>
<td>3</td>
</tr>
<tr>
<td>101:108</td>
<td>Fundamentals of Orthopedics</td>
<td>3</td>
</tr>
<tr>
<td>101:109</td>
<td>Physical therapy principles and methods is similar to specific medical, surgical, neurological and orthopedic conditions; significance of diagnostic tests and measurements for physical therapy procedures; emphasizes patient care in evaluating problems-solving forms to follow essential procedures</td>
<td>3</td>
</tr>
<tr>
<td>101:110</td>
<td>Therapeutic Exercise I</td>
<td>3</td>
</tr>
</tbody>
</table>

Principles and techniques of therapeutic exercise related to prevention, correction, improvement of clinical and surgical defects; muscle or joint injury; evaluation of test and measurements; joint range of motion, gait analysis and functional activity.
Physician's Assistant Program

See "College of Medicine."

Physics and Astronomy

Department Head: James A. Yoon
Assistant Department Head and Undergraduate Adviser: Edward B. Nation
Degree offered: B.A. and M.S. in Astronomy and Physics, Ph.D. in Physics

The Department of Physics and Astronomy provides comprehensive and rigorous instruction in all basic aspects of these subjects. In addition, it provides research facilities and guidance for individual scholarly work at an advanced level in selected specialties.

Total departmental enrollments are typically 1,000 student registrations during each semester of the academic year and 100 during the summer session. All courses and advanced laboratories are taught by full-time members of the faculty. Senior members of the faculty teach the elementary courses and supervise graduate student assistants who conduct the laboratories.

Beyond the elementary level, typical course enrollments are 25, and there is ample opportunity for individual work. Special introductory courses having similar enrollments are offered for majors in physics and for others with special interest in the subject. There are about 60 undergraduate majors, 20 of whom are Honors students, and 60 graduate students in physics or astronomy.

About 40 percent of the graduates with Bachelor of Arts degrees pursue advanced study, 25 percent find secondary school teaching posts and 35 percent go into temporary military service or find employment in government laboratories or in industry.

Graduates of The University of Iowa with M.S. or Ph.D. degrees in physics or astronomy continue to find satisfactory employment in universities, colleges and research laboratories in government and industry, despite a recent national shrinkage in such opportunities.

Undergraduate Major in Physics

The following courses or their equivalents are required for the Bachelor of Arts degree with a major in physics:

- Calculus I, II, III and Introduction to Linear Algebra
- Introductory Physics I, II, III
- Introduction to Quantum Mechanics
- Statistical Physics
- Electricity and Magnetism
- Atomic Physics

101111 Therapeutic Exercise II
4 s.h.
Concentration of 101110 which is prerequisite. Lecture, demonstrations, case presentations in principles and techniques of therapeutic exercise and specific selected exercises utilizing therapeutic exercise equipment.

101112 Principles of Surgery
3 s.h.
A study of selected surgical methods and techniques, their application in medicine, and their importance in the treatment of disease. Medical, surgical, and nursing problems and their solutions. Psychological and emotional influences upon normal and abnormal patient behavior; evaluation, feasibility and suitability of methods of evaluation of a variety of medical and surgical disorders.

101116 Clinical Observation
3 s.h.
Practical experience of physical therapy procedures in a physical therapy department under supervision of qualified physical therapists.

101110 Clinical Education and Rehabilitation
3 s.h.
Combination of 101110 which is prerequisite; also presents units involving consideration of the total patient care concept.

101120 Clinical Internship
3 s.h.
Eighteen weeks of full-time clinical experience, emphasizing independent evaluation, planning, and treatment implementation.

101132 Professional Aspects of Disability
3 s.h.
In-depth consideration of problems related to physical disability; and overview of psychology. Prerequisite: 101111 psychosomatics.

101131 Therapeutic Physical Agents
3 s.h.
Theory, physiological effects and techniques of physical agents as they are used in all aspects of physical therapy diagnosis and application; hydrotherapy practical and theoretical; physical agents of ultrasound and hot applications, under adverse conditions in relation to various physical disabilities.

101141 Professional Orientation and Administration
3 s.h.
Lectures and discussions related to physical therapy and other allied health professions; professional ethics and responsibilities of the individual to the profession and society; organization, supervision and administration of physical therapy facilities; personnel relationships, communication and organizational skills.

101190 Electrotherapy
3 s.h.
Descriptive medical electronics and instrumentation; application of principles, methods and techniques in diagnosis and therapeutic use of medical electricity; administration and planning and assignments in developing the techniques of application.

101212 Medical Instrumentation
3 s.h.
Study of basic concepts in electronics and application of these concepts in physical therapy apparatus and procedures.

101213 Principles of Human Motion I
2 s.h.
Basic anatomy, physiology and mechanics of human movement briefly reviewed; basic concepts of mechanics applied to human and in current and prospective practice of physical agents. Prerequisite: 101112.

101214 Evaluation of Selected Neurological Disorders
2 s.h.
Clinical testing methods for evaluating central nervous system development as well as the diagnostic techniques used to obtain active and automatic nerve responses with progressive greater voluntary and proprioceptive movement.

101215 Psychophysiological Methodology and Design
2 s.h.
Individual instruction, observation and experiment in psychophysics, guidance and analysis of individual performance.

101220 Advanced Electrophysiology and Electromyography
2 s.h.
Study of clinical applications for treatment of disorders of neuromuscular system, special emphasis on electromyography.

101001 Thesis: Physical Therapy
2 s.h.
Serve as guide and mentor to student in all facets relating to thesis; formulation of problem, literature search, preparation for collecting data, analysis of data, organization of thesis and writing thesis.

101229 Problem-solving Ability Related to Physical Therapy: Concentration in Statis
2 s.h.
Problem-solving ability related to physical therapy: concentration in statistics.

101228 Analytical Scientific Literature
2 s.h.
Survey and the use of scientific literature as an aid in critically evaluate experimental data, knowledge in selected areas and vocational skills, plus ability to read and under

101227 Research in Therapeutic Exercise
2 s.h.
Individual student effort to place some phase of physical therapy on a scientific
Principles of Chemistry II and Elementary Chemistry Laboratory 5 s.h.

General Chemistry II and General Chemistry Laboratory 5 s.h.

Undergraduate majors who plan to pursue graduate study in physics are advised to:

- Take 20:171, 172 Mathematical Methods of Physics;
- Go beyond the minimum requirements listed above to the greatest feasible extent, including further work in mathematics.

Undergraduate Major in Astronomy

Astronomy includes the subdisciplines of astrophysics, classical astronomy, radio astronomy and space astronomy. 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 in advanced study in astrophysics, radio astronomy or space astronomy.

The following courses or their equivalents are required for the Bachelor of Arts degree with a major in astronomy.

22M:25, 26, 28 Calculus I, II, III and
22M:27 Introduction to Linear Algebra 16 s.h.
25:17, 18, 19 Introductory Physics I, II, III 12 s.h.
29:61, 62 General Astronomy 8 s.h.
29:115 Intermediate Mechanics 3 s.h.
29:116 Introductory Quantum Mechanics 3 s.h.
29:119, 120 Introduction to Stellar Astrophysics I, II 6 s.h.
29:129, 130 Electricity and Magnetism 6 s.h.
29:132 Intermediate Laboratory 4 s.h.
29:137 Astronomical Laboratory 2 s.h.
29:183 Atomic Physics 3 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 3 s.h.
29:118 Statistical Physics 3 s.h.
29:171, 172 Mathematical Methods of Physics 6 s.h.

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

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 in Astronomy.

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 may qualify for a Doctor of Philosophy degree in physics with specialization and a dissertation 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 interdepartmental 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 in preparing a plan of study and in guiding the student's progress. A graduate student becomes a candidate for the 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 dissertation then becomes the candidate's general adviser and the chairman of the final examination committee.

For the general admittance 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 examination in either case is an oral one conducted by a committee of three members of the graduate faculty appointed by the dean of the Graduate College.

The program for the M.S. degree with thesis requires 30 semester hours of graduate work and a thesis based on original experimental or theoretical investigation by the candidate. No more than six of the minimal 30 semester hours may be for research (29:281 Research in Physics).

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 Individual Critical Study). 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 at a previous institution.

29:115 Intermediate Mechanics 3 s.h.
29:116 Introductory Quantum Mechanics 3 s.h.
29:117 Optics 3 s.h.
29:118 Statistical Physics 3 s.h.
29:129, 130 Electricity and Magnetism 6 s.h.
29:131 Advanced Laboratory 4 s.h.
29:171, 172 Mathematical Methods of Physics 6 s.h.
29:191 Atomic Physics 3 s.h.
29:192 Nuclear Physics 3 s.h.
29:193 Introductory Solid State Physics 3 s.h.

The student who wishes to pursue a career as an advanced graduate student should be prepared for as much advanced work as is physically possible. The student should take the examination for the Ph.D. degree and be prepared to accept a Ph.D. degree if qualified.
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:

Delete:
29:121 Advanced Laboratory 4 s.h.
29:192 Nuclear Physics 3 s.h.
29:193 Introductory Solid State Physics 3 s.h.

Add:
29:121, 122 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.
29:222, 223 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 Seminar: Astrophysics 2 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.

Emphasis is on the capabilities developed and knowledge gained rather than on the particular courses taken, credits acquired or other aspects of the means to the end. Although no specific courses are required, the following are recommended as preparation for the comprehensive examinations:

29:191, 192, 193 Atomic Physics, Nuclear Physics and Introductory Solid State Physics
29:205 Classical Mechanics
29:212 Statistical Mechanics I
29:211, 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 29:171, 172 Mathematical Methods of 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. No more than 20 of the minimal 72 semester hours may be in research and seminars.

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 Computing 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 machinists, and there are several electronics and machine shops for the use of advanced students and the research staff.

Experimental research is conducted in the fields of nuclear structure physics, ionospheric and space physics, astrophysics, solar and planetary physics, chemical physics, solid state physics and plasma physics.

Theoretical research is devoted to nuclear theory, statistical mechanics, plasma physics, theory of solids, theory of elementary particles, solar terrestrial 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.

Faculty Roster

Professor Carlson, Frank, Gatrell, Montgomery, Nelson, Norbeck, Van Allen; professor emeriti Tondal, Wylie; associate professors Carpenter, Hershkowitz, Joyce, Klink, Kueer, McHliment, Neff, Savage, Schwitzere; assistant professors Emery, Fia, Payne, Shawhan.

Courses

Physics

Prerequisites and corequisites are specified as a guide and may be waived by the instructor. Students may not repeat for credit or quality points an elementary course if they have already completed a higher level course for which the elementary course is a prerequisite; in particular, 29:1-2 College Physics, eight semester hours, or 29:13 Introduction to Nuclear and Elementary Particles, eight semester hours, or 29:61 General Astronomy, eight semester hours, or 29:62 Theoretical Physics, four semester hours, or 29:13 Chemistry and Physics of the Environment, four semester hours, are accepted as core courses in natural science to the College of Liberal Arts.

Primary for Undergraduates

29:1 College Physics 4 s.h.
Open to freshmen: for premedical, preprofessional and pharmacy student and other science students interested in elementary physics. Descriptive lectures, laboratory and tutorial work in mechanics, heat and sound. Prerequisites or corequisite: Mathematics 2234-H or equivalent. Offered both semesters and summer sessions.

29:2 College Physics 4 s.h.
Continuation of 29:1, which is prerequisite. Electricity, magnetism, light and modern physics. Offered both semesters and summer sessions.

29:3 Basic Physics 4 s.h.
Quantitative treatment of mechanics, electricity, heat, liquids and gases with emphasis on useful applications. Meets one semester physics requirements.

29:6 Practical Electricity and Electronics 2 s.h.
This course covers some of the basic principles and practical experience necessary
Physics and Astronomy

Primary for Undergraduates

20:50 Modern Astronomy
Survey of astronomy, special attention given to topics of current interest such as planetary exploration, space astronomy, pulsars, quasars, black holes and cosmology. Discussion laboratory sessions for experimental observations and problem solving. Prerequisites: one year each of high school algebra and geometry.

20:51 General Astronomy
Open to freshmen, descriptive lecture and study of astronomical techniques and all components of solar system: cometary orbits; sun, earth, moons, planets and satellites, meteorites, comets, energetic particles and interstellar medium; also moon-man interactions and current space investigations, observational work with telescopes and problem work. Prerequisites: at least one year each of high school algebra and geometry.

20:62 General Astronomy
Continuation of 20:51 which, however, is not prerequisite; celestial astronomy, time and phase of stars, systems of stars, interstellar matter and galaxies. Prerequisites: same as for 20:51.

20:64 Reading in Astronomy
Correlates book of Offerings before registering.

20:99 Honors Thesis
See "Physics."

For Undergraduates and Graduates

20:104 Reading in Astronomy
Correlates book of Offerings before registering.

20:105 General Astronomy
Survey of astronomy, special attention given to topics of current interest such as planetary exploration, space astronomy, pulsars, quasars, black holes and cosmology. Discussion laboratory sessions for experimental observations and problem solving. Prerequisites: one year each of high school algebra and geometry.

20:115 Introduction to Stellar Astrophysics
Fundamentals of stellars and stellar spectroscopy: properties of stars, spectra classification and spectral lines; stellar vibrations and dynamics; plasma behavior and applications to investigations of stars of galactic and extragalactic systems. Prerequisites: 20:10 and 2384:26 or equivalent. Offered spring quarter. Offered 1974-75.

20:195 Introduction to Stellar Astrophysics
Continuation of 20:115. Prerequisites: 20:19 and 2384:26 or equivalent. Offered spring quarter. Offered 1974-75.

20:121 Solar System Astrophysics
Introduction to the physical properties, motions, and atmospheres of the sun, planets, and satellites, with emphasis on solar activity and the solar cycle. Prerequisites: 20:15 and 2384:26 or equivalent. Offered spring quarter. Offered 1975-76.

20:122 Radio Astronomy
Current developments in radio astronomy: radio-frequency radiation from stars, planets, and satellites; terrestrial and extraterrestrial applications. Prerequisites: 20:15 or 2384:26 offered spring quarter. Offered 1975-76.

20:133 Astronomical Laboratory
Advanced laboratory work and observation with 24-inch telescope; techniques of modern photography, polarimetry and spectrophotometry; laboratory work in data reduction, instrument calibration and numerical computation. Prerequisites: 20:52 and 20:65. May be repeated.

20:220 Individual Critical Study

20:222 Theorectical Astrophysics I
Theory of stellar phenomena and continuous spectra of stars; formation of atmospheres in relation to spectra of stars. Prerequisite: consent of instructor. Offered fall quarter. Offered 1974-75.

20:223 Theoretical Astrophysics II
Prerequisite: 20:222, which is prerequisite. Offered spring quarter. Offered 1974-75.

20:284 Stellar Structure and Evolution
Structure of stellar interiors; nuclear energy sources and chemical synthesis in stars and end-products of nucleosynthesis. Prerequisite: 20:15. Offered fall quarter. Offered 1975-76.

20:286 Special Topics in Planetary and Space Science
One or more of following topics: solar interior, planetesimals, planetary atmospheres and clouds, non-solar planets, aurorae and magnetospheres; internal structure, surfaces, atmospheres and electromagnetic properties of planets, moons and comets. May be repeated.

Astronomy

See Exploratory area under Physics section.
Political Science

Department Chairman: Samuel C. Patterson

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

The program in political science deals with general principles of human behavior and organization which enable one to understand and explain political situations, events and problems. Both the undergraduate and graduate programs in political science emphasize broad and comprehensive study, rather than narrow specialization on restricted aspects of the subject.

Undergraduate Programs

At the undergraduate level the study of political science is general and not vocational. Undergraduate political science majors often enter careers in law, public service or teaching; others enter business, journalism or medicine. The Department offers a standard undergraduate major, and a special teaching major.

Standard Major

Undergraduates seeking a standard major must meet the following requirements:

1. At least 27 semester hours of work in political science, including:
   30:1 Introduction to American Politics or
   30:2 Introduction to 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; and
   at least 15 semester hours in political science courses numbered 100 or above.

   Students who transfer from other colleges or universitites must take at least 9 of the 27 semester hours of work in political science at The University of Iowa.

2. Complete at least 12 semester hours of work in one of these departments: Economics, Geography, History, Philosophy, Psychology, Sociology, Anthropology and European Literature and Thought. Completion of this requirement satisfies the College of Liberal Arts social science core requirement.

3. A grade-point average of at least 2.0 in all political science courses taken at the University of Iowa, and in all courses in the related departmental area of concentration.

Teaching Major

Undergraduates planning to teach in the social sciences with an emphasis on political science must meet these requirements:

1. At least 20 semester hours of study in political science, including:
   30:1 Introduction to American Politics or
   30:100 The American Political System; 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; and
   at least eight semester hours of study in political sciences courses numbered above 100.

2. At least 16 semester hours of related work, not including core courses or their substitutions. The 16 semester hours may include eight semester hours of survey courses in American history, and eight semester hours of basic courses offered in economics, geography, sociology and anthropology.

3. Completion of the sequence of professional education courses leading to certification (see "College of Education").

Honors in Political Science

Honors sections are scheduled in some courses for limited groups of outstanding students. Those interested should consult the appropriate instructor at the time of registration or before.

The Department also has a program 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 on at least 12 semester hours of work in political science. To graduate with Honors, the student must maintain a grade-point average in political science of at least 3.2 and a general grade-point average of at least 3.0, and must complete at least two semesters of work in the advanced Honors Seminar (30:187, 188 Honors Seminar) with a grade of B or better each semester. In some cases, the Honors adviser may require a comprehensive political science examination at the end of the senior year. Students interested in seeking a B.A. degree with Honors should contact the Departmental Honors advisor prior to the beginning of the junior year.

Graduate Programs

At the graduate level, the Department emphasizes the program leading to the degree of Doctor of Philosophy in political science, which is particularly appropriate for students planning a scholarly academic career, and the Master of Arts in Public Affairs program, which is designed for students who wish to prepare for careers in government service, public affairs or civic education teaching in secondary schools or junior and community colleges. The general Master of Arts degree is normally pursued by persons whose ultimate degree objective is the Ph.D.

Master of Arts in Public Affairs

Although all students in the public affairs program must take the core courses indicated in the schedule below, elective opportunities make possible several areas of specialization. Students inter-
M.A. Without Thesis
If a student's first-year evaluation committee finds that his or her coursework and research papers provide sufficient evidence of the research and writing skills ordinarily demonstrated in a master's thesis, it may recommend that he or she be allowed to proceed with a doctoral program without writing a thesis. The requirements for the M.A. without thesis include completion of at least 36 semester hours with a grade-point average of at least 3.0, and review of the student's record by a final examination committee, which may waive the final oral examination.

The same requirements apply where a first-year evaluation committee finds the quality of a student's work inadequate for recommending continuation toward the Ph.D. but adequate for proceeding with the master's program, and recommends that the student be permitted to seek the non-thesis M.A. as a terminal degree.

Doctor of Philosophy Program
Students are encouraged to seek the Ph.D. only after they have demonstrated their scholarly competence over at least two semesters of graduate study. Requirements for the Ph.D. include completion of at least three academic years in residence and 72 semester hours of graduate-level credit, including work for the M.A. and transfer credits; receipt of the M.A. degree; at least one semester each of special supervised training in teaching and in research; demonstrated command of appropriate research skills; passage of a comprehensive examination; preparation of a dissertation; and the final examination.

The Tool Requirement
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 the tool is other than a foreign language, the student's doctoral committee will specify the criteria to determine whether the requirement has been met. The tool requirement must be met before the student takes the comprehensive examination.

Comprehensive Examination
Students are expected to take the comprehensive examination after completing the second full year of graduate study. Candidates for the Ph.D. take written examinations in three of these areas:

1. American Politics
2. Comparative Politics
3. International Politics
4. Political Theory
5. Public Administration
6. Philosophy and Methods of Political Research

Before taking the written examinations, candidates must present to each member of the examining committee a written dissertation proposal. The dissertation proposal constitutes an integral part of the comprehensive examination. It must be examined and defended in the oral examination, which deals also with all matters relevant to the written examinations.

Teaching and Research Training
Each Ph.D. candidate in political science must take at least one semester of special supervised training in teaching and in re-
search. This instruction is normally given in association with the student's service as a teaching or research assistant.

Dissertation

Nor 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 work on their dissertations.

Further Information

A comprehensive statement of departmental requirements is set forth in the Guide to Graduate Study in Political Science. For general graduate admission and degree requirements, see "Graduate College."

Special Facilities

The Laboratory for Political Research provides logistical and technical support for undergraduate and graduate teaching and research programs undertaken by the Department of Political Science. The Laboratory assists faculty members in utilizing qualitative data and the computer for their undergraduate instruction. This assistance is provided to social scientists at The University of Iowa and at 12 other institutions which make up the Iowa Regional Computer Network. The Laboratory is an integral part of graduate education in the Department, and is involved at every level of advanced study.

Publications from the Laboratory for Political Research include a national archival newsletter (SS Data), a research report series consisting of substantive and methodological papers, a technical report series dealing with statistical and other computer applications, and a series of computer-based instructional manuals for classroom use. In addition, the Laboratory disseminates reprints of the scholarly articles published by faculty and graduate students of the Department.

The Social Science Data Archive holds more than 450 data collections, and the Laboratory is a user contact site for data from the 1970 United States Census. The facilities of the Laboratory include a card reader/line printer, two communications terminals, three card punchers and a counter-sorter. The Laboratory also supervises the College of Liberal Arts and Sciences Computer Terminal Center for the social sciences, which houses terminals for access to one of the University's Hewlett-Packard 2000DF educational computers.

The Comparative Legislative Research Center of the Department of Political Science was established to promote comparative studies of legislative institutions and behavior in a wide variety of political systems. The main activities of the Center include bibliographic and archival work, data collection, collaborative research with foreign scholars, training of students in legislative research, conferences and seminars and publication of research.

Faculty Roster

Professors Boyum, Davis, Johnson, Kelso, Leeseburg, Murray, Patterson, Ratcliff, Sten, Van Dyke, Walliser, associate professors Kim, McCrone, Welsh; assistant professors Barkan, Cary, Cowan, Green, Lewis-Beck, Lucier, Madsen, McCasky.

Courses

Introductory Undergraduate

301 Introduction to American Politics 4 s.h.

Development of national politics is traced historically. Ruffles Iowa lower credit requirements. Open to freshmen and sophomores only.

303 Introduction to Politics 4 s.h.

Basic elements and principles of politics, illustrated with reference to many different countries and settings. Introduction to concepts and methodology of political science, and in basic approaches used in the field. Open in all undergraduate.

30-10 Introduction to Political Behavior 3 s.h.

Patterns and bases of political attitudes and behavior in public, organizational and institutional settings. Laboratory exercises in elements of public behavior research.

30-11 Introduction to Political Theory 4 s.h.

Human behavior, theories and analytical techniques common in the study.

30-13 Introduction to Comparative Politics 4 s.h.

Comparative study of several European, Asian, African or Latin American systems. Emphasis on similarities and differences among political parties, interest groups, legislative and executive institutions, political decision-making processes and patterns of voting behavior and citizen participation.

30-14 Introduction to World Politics 4 s.h.

Major world regions and contemporary problems of international relations.

Advanced Undergraduate

30-160 The American Political System 2-4 s.h.

Political behavior of American individuals and groups and institutional structure of political system. Ruffles Iowa lower credit requirements. Open to juniors, seniors, non-political-science graduates. No one who has had 30-1 may enroll.

30-171 Municipal Government and Politics 3 s.h.

Ideals of city government, states and city and federal government; liberty and responsibilities of municipality; city elections, campaign issues and role of pressure groups.

30-172 Iowa Government and Politics 3 s.h.

Iowa's political parties, political campaigns, elections, state and federal processes, legislative process, judicial proceedings, role of Iowa government.

30-173 Comparative State Politics 3 s.h.

Approaches to empirical analysis of political behavior in America and foreign states and governments, with emphasis on elections, parties, interest groups, power, public opinion, home rule, etc.

30-174 Political Parties 3 s.h.

Theories, structures and functions of political parties in United States; development of motivations, mobilization, elections, organizations, policies in office and inter-group relations throughout American system.

30-185 The Presidency 3 s.h.

Office, powers, functions of American presidency; development and multiple roles of chief executive; party, congress, administrative, judicial relationships.

30-186 American Public Policy 3 s.h.

Functions and policies of national government; emphasis on domestic policy-making, impact of public policy.

30-187 American Constitutional Law and Politics 3 s.h.

Legal framework of American political system; emphasis on analysis of Supreme Court rulings.

30-190 International Relations 3 s.h.

Principles of law which define rights and duties of nations in their dealings with each other; arms control, negotiations, treaties and conventions.

30-177 Politics of Modernization 3 s.h.

Increase open systems of political change, dealing with major institutional approaches, including Marxist, evolutionary, co-operative, Institutional models, syntheses, reconstruction of revolutionary problems in the analysis of political change: internationalization, participation, power, linkage, reform and revolution.

30-190 Introduction to Public Administration 2 s.h.

Administrative and organizational theory and behavior; techniques of management, relations between administration and other branches in federal and state government; administrative politics.

32-113 Municipal Administration 4 s.h.

Principles and problems of municipal administration, including tax problems, personnel matters, budgeting, planning and functional operations of city administration. i.e., police, fire, public health, recreation, social welfare services and recreation.
Undergraduate Programs

The B.A. and B.S. degree programs both are designed to contribute to a student's general liberal education and to provide a foundation for post-baccalaureate training in any of a wide variety of areas of specialization. Students interested in psychology should clearly understand that almost all vocational opportunities in psychology require substantial advanced preparation; the number of jobs for those with only an undergraduate degree is extremely limited.

The B.S. program is specifically intended for students planning to pursue advanced work in psychology or in a closely related discipline. The B.A. program includes fewer specific requirements and therefore provides the student an opportunity to develop an emphasis in psychology within a broad undergraduate program.

Students in either program begin with a general introductory course, followed by one or more courses in methodology and electives in several broad areas of psychology: clinical, developmental, social, physiological, and general experimental. The Department enjoys excellent facilities to support teaching and research about human and animal behavior. All faculty members are actively engaged in research and they bring to their undergraduate teaching the excitement that such activity engenders. Many opportunities exist for interested and capable students to participate in some of the research projects being carried on in the Department.

All current and prospective psychology majors should be aware of the following opportunities and requirements:

Adviser: Faculty advisers are assigned on the basis of student number. A list is available at registration and in the Department office.

General Prerequisite: An introductory psychology course, 31:1 Elementary Psychology or 31:3 General Psychology, or equivalent, must be completed prior to any other psychology course except 31:143 Introduction to Statistical Methods and 31:17 Educational Psychology and Measurement.

Social Science Core: The introductory courses, 31:1 and 31:3, are options for satisfying four hours of the eight-semen-hour credit requirement for the College of Liberal Arts. This entire core requirement will automatically be satisfied by anyone completing a major in psychology.

Courses for Freshmen: Freshmen, other than those in the Honors program or in certain special pre-professional programs, e.g., Nursing, are discouraged from registering for any psychology courses. Some exceptions are made during the second semester, or for students with unusually adequate preparation.

Honors Program: The Department has an active Honors program open to majors with at least a 3.3 grade-point average in psychology courses and 3.0 overall. The program includes research seminars and individual research collaboration with faculty members. Interested majors should contact the Departmental Honors' Advisor before the start of the junior year.

Undergraduate Research Participation Program: With support from the National Science Foundation, the Department has for many years conducted an Undergraduate Research Participation Program for exceptionally qualified junior and senior psychology students from the University of Iowa and nearby institutions. During the academic year, faculty members assist participants in the planning of individual research projects which the students then carry out in our laboratories during the summer months. (Continuation of this program is contingent on future federal support.)

The Bachelor of Arts Degree

The student must satisfy the general College of Liberal Arts requirements for the B.A. degree and must complete at least 25 semester hours in psychology. At least the last nine semester hours of the major must be completed in residence. The B.A. program must include an introductory psychology course (31:1 or 31:3 or equivalent); 31:43 Evaluating Psychological Research, or equivalent; and one area elective course from each of the five area groupings given below, or equivalents. Alternatively, the 31:43 requirement may be satisfied by a combination of 31:143 Introduction to Statistical Methods and 31:120 Experimental Psychology I. This alternative is strongly recommended to students in the B.A. program who plan to pursue graduate work in psychology or related areas.

The Bachelor of Science Degree

The student must satisfy the general College of Liberal Arts requirements for the B.S. degree and must complete at least 26 semester hours of course credit in psychology. At least the last nine semester hours of the major must be completed in residence. The B.S. program must include an introductory psychology course (31:1 or 31:3, or equivalent); 31:143 Introduction to Statistical Methods, or equivalent; 31:120 Experimental Psychology I, or equivalent; 31:121 Research Methods I, or equivalent; and one 100-level area elective course from each of the five major groupings given below, or equivalents.

Candidates for the B.S. degree in psychology must satisfy the College of Liberal Arts eight-semester-hour natural sciences core requirement; one semester of chemistry followed by one semester of zoology, or with eight semester hours of chemistry; or with eight semester hours of physics. B.S. majors also must complete either one semester of calculus and two semesters of one foreign language, or two semesters of mathematics through analytic geometry and four semesters of one foreign language. The courses in natural science and mathematics required for the B.S. degree cannot be taken pass-fail.

Area Electives

Area A (Clinical and Personality)

31:13 Psychology of Adjustment
31:95 Personality
31:39 Assessment of Emotion
31:61 Current Theories of Schizophrenia
31:163 Abnormal Psychology

Area B (Social)

31:15 Introduction to Social Psychology
31:103 Development of Social Behavior
Graduate Program

The graduate program in psychology is designed to provide comprehensive training leading to the Ph.D. degree in one of the following broad areas or some combination of areas: general experimental psychology, physiological psychology, social psychology, clinical psychology and developmental psychology. The program is planned to provide both general training and specialty training with sufficient flexibility to encompass a wide spectrum of student interests.

The primary purpose of the program is to produce graduates who are deeply committed to the study of behavior, familiar with fundamental knowledge about behavioral processes, thoroughly trained in the methods and techniques for careful investigation of basic and applied problems, and determined to make significant contributions to the discipline of psychology and to society generally.

The most appropriate jobs for graduates of this program are in academic, governmental, business or private institutions which provide opportunities for continuing analysis and investigation of fundamental questions about behavior, for teaching about research results and methodologies, and for application of psychological knowledge and techniques to the solution of important practical concerns. Prospective applicants should understand that the number of such positions is sharply limited and the competition for available openings is intense.

Graduate Admission

As is evident from the preceding paragraphs, the graduate program in psychology is geared primarily to students seeking the Ph.D. degree; all applicants are considered on this basis. A very small number of qualified applicants interested in advanced work only through the M.A. level may be admitted, primarily those who intend to pursue a joint graduate program involving psychology and another discipline or profession. Joint programs must be specially designed and the individual must apply to and be accepted by each program.

Applications may be submitted at any time but are considered only once each year—between May 1st and July 15th. For admission the following fall. Admission decisions are based on a composite consideration of prior academic performance, letters of reference, scores on the verbal and quantitative sections of the Graduate Record Examination, and the applicant's statement of reasons for pursuing advanced work in psychology. An undergraduate major in psychology, including courses in experimental psychology, statistics and additional work in the natural sciences and in mathematics, is certainly desirable though not required. Students who have not had such a background but who are strongly qualified on other grounds may be admitted but will be expected to remedy deficiencies through special coursework or independent study prior to enrolling in the regular graduate program.

A foreign language is not required for admission, and there are no foreign language requirements for either the M.A. or the Ph.D. degree in psychology.

Financial Assistance for Graduate Students

All students admitted to the graduate training program in psychology automatically are considered on the basis of merit for each financial support as may be available in the form of teaching assistantships, research assistantships, traineeships, tuition scholarships, etc. No separate application for financial aid is required.

Advanced Degree Requirements

To ensure a broad background in the content, philosophy and methodology of the core areas of the Department, the Ph.D. student who intends to pursue an advanced degree in the Department of Psychology must satisfy during the first three semesters the following core requirements: a two-semester sequence in statistical analyses, three courses chosen from a list of core courses representing a variety of content areas, and at least five semester hours of research practicum. Exemptions from one or more of these core requirements may be granted by the faculty after evaluation of either the student's previous work or the student's performance on an examination.

During the first semester of graduate work and in each of the next five or six semesters, the student elects at least one course in a speciality area. The specialty area may correspond to one of the five major training areas (general experimental, physiological, social, clinical, and developmental), or it may be a concentration within one of these areas, or it may cut across two or more of the major divisions. As the student progresses through graduate training, an increasing portion of time is devoted to small seminars, individual research and reading projects, and work on the thesis or dissertation.

In addition to core and specialty requirements, each candidate for the Ph.D. degree in this Department is required to have taken at some point a graduate course in the general area of history and systems of psychology, or otherwise to demonstrate competence in this area.
The Ph.D. program in psychology is designed to be a four-year program, ensure that students in the clinical area ordinarily have an additional off-campus internship year. A student entering with a master's degree from another institution will require an additional two or three years in this Department to earn the Ph.D., depending on the nature and extent of previous research training and activity.

The Master of Arts degree with thesis is required for all students who intend to earn the Ph.D. in this Department, and may be the primary degree objective for a very few students, particularly those in special joint programs. This degree is granted after satisfactory completion of at least 30 semester hours of coursework including the specified core requirements, preparation of an acceptable scholarly thesis and successful oral defense of the thesis. Typically, work for this degree should be completed after four semesters in the Department. The Master of Arts degree without thesis also is available and may be the appropriate objective for certain special students. It ordinarily will be the degree taken by those students who for various reasons decide to terminate their work in this Department after four semesters. The M.A. without thesis requires satisfactory completion of 38 semester hours of coursework, including the specified core courses, and successful performance on a written and oral examination covering the student's chosen area of specialization.

For each student pursuing the Ph.D. degree, the Department faculty reviews performance on the master's thesis (or equivalent project for those entering with a non-thesis M.A.), in all coursework and in research, teaching or other training activities. If this review deems the student is admitted to the comprehensive examination, a written examination covering a range of material is in the student's area of concentration. This examination ordinarily is taken shortly after completion of the M.A. requirements. Formal advancement to candidacy for the Ph.D. follows a successful performance on the comprehensive examination and all other aspects of the student's work to that point.

Major Specialty Areas for Graduate Training

The general experimental program provides opportunities for specialization in areas such as the following: animal behavior, clinical psychology, educational psychology, experimental psychology, human engineering, information processing, perception, psychophysics and scaling, sensory processes, mathematical models, etc. Students interested in experimental child psychology—learning, motivation and transfer—also may work within the general experimental program. Students in this program develop considerable sophistication about laboratory techniques, computer-controlled data acquisition and reduction systems, electronic instrumentation, etc., in addition to getting a solid background in the historical and contemporary theoretical frameworks of psychology and in statistical and mathematical techniques.

Students in the physiological program specialize in some aspect of central nervous system physiology and its relation to behavior. Emphasis is on chemical and pharmacological aspects of brain function as these relate to behaviors ranging from instrumental and classical conditioning to social interaction in open-field situations. Specialization may involve neurochemistry, neuropharmacology, neuroendocrinology, electrophysiology, human neurophysiology or some combination thereof. In addition to broad training in psychological theory and research methods, students in the physiological program usually take courses in one or more of these related scientific disciplines. They also have extensive laboratory experience to develop skills in neurosurgical techniques, biochemical assay procedures, laboratory computer usage, etc.

The social psychological program offers specialized training in three sub-areas: social influences on behavior, attitude formation and change, and the psychology of groups. The first of these includes such phenomena as social learning, imitation, conformity, social facilitation, behavioral contagion and social reinforcement. The second includes attitude acquisition, cognitive consistency and the notions of commitment, persuasion and resistance. Under the third sub-area, one might focus on group versus individual performance, on interdependence, or on topics in the area of social interaction. In addition to thorough training in the basic disciplines of experimental psychology, statistical analysis, computer processing, etc., the student in the social area has ample opportunities to handle instrumented observation laboratories and to develop skill in the conduct of field investigations.

Students in the clinical program may develop special competence in such areas as personality, psychophysiology, aggression, psychotherapy, schizophrenia, behavior therapy, psychopharmacology, childhood behavior disorders, psychodiagnostics, etc. Fundamental grounding in psychological theory and experimental design is supplemented with systematic training in psychological appraisal and counseling with children and adults. All students develop appropriate clinical skills through work in the Department's Research and Training Clinic, in practicum training and in internship placements. The clinical training program is fully approved by the American Psychological Association.

The developmental psychology program provides opportunities for students to acquire special understanding of age-related changes in various aspects of behavior, e.g., sensory and perceptual processes, verbal processes and memory, learning and cognition. Students also may focus on social and personality development, developmental physiology or factors in growth and development related to clinical problems. Focus on the mechanisms of change is developed against a background of broad training in the theories and techniques of general experimental psychology.

Special Facilities

The Department's facilities for graduate training and research are among the finest in the country. The Kenneth W. Spence Laboratory of Psychology, and adjoining space in Illini Hall, include three separate animal facilities, several surgicures, a histology laboratory, a number of small laboratory computers, automated data acquisition and reduction systems, observation suites with remote video visual control and recording equipment, soundproof chambers, closed-circuit TV systems, electro-physiological recording rooms, conditioning laboratories, the Research and Training Clinic and well-equipped electronic, mechanical and woodworking shops. Specialty-equipped research trailers are available for use in studies conducted at schools or other locations.
Students and faculty have ready access to the IBM 360/67 in the University Computer Center through an ATS terminal and a remote input-output station in East Hall. Office space for graduate students and faculty is provided in East Hall and the Psychology-Edison branch of the main University Library is conveniently located in the west wing of East Hall.

The research and teaching activities of the Department are greatly benefitted by the facilities and staff and other University and local agencies including the University Early Childhood Education Center, the University's General, Childrend's and Psychophathic hospitals, the Veteran's Administration Hospital, the University Counseling Center, the Child Development Center and the Speech and Hearing Clinic.

Special Faculty Strengths

National rankings of graduate psychology programs consistently have shown this Department to be among the top 20 in the nation. The widely-recognized eminence of the faculty to research and scholarship is manifest in the publication of some 15 articles, books, reviews and book chapters each year, and in the fact that at any one time almost half of the faculty members are active as editors, associate editors and regular consulting editors for major psychological journals.

Faculty Roster

Professors Beckholt, Beaton Bergmann, Fox, Gommezano, Harvey, Rosenbaum, Salch, Simon, Simao, Small, Spiker, Stull; professor emeritus Streitz; associate professors Cofer, Cottrell, Darfman, Fowles, Hirsch, Hobbs, Levin, Norton, Pullak, Rawall; assistant professors Arnold, Barn, Borkovec, Greenberg, Graham, Johnson, Kinzler, Rosaner, Wessen, Werot, Affiliated staff: research professor Knott; clinical pro-

For Undergraduates

Either 31:11 or 31:12 is a prerequisite to all other courses in psychology except 31:17 and 31:43. Either 31:21 or 31:3, but not both, is acceptable toward the major and minor requirements, and only one may be taken for credit toward a degree in psychology.

31:1 Elementary Psychology 4 s.h.
Basic principles in study of behavior and elementary principles of behavior. Recommended for I.A. majors in psychology and other students majoring in A.S. degree with major in other psychology.

31:2 General Psychology 4 s.h.
Same topics as 31:1, but with additional discussion of research and greater emphasis on research in which empirical methods are applied to analysis of behavioral events. Intended primarily for majors in psychology and for majors in other departments who have completed 31:1.

31:13 Psychology of Adjustment 3 s.h.
The basic principles of psychology as applied to contemporary perspectives of personal adjustment.

31:14 Survey of Developmental Psychology 3 s.h.
Survey of the longitudinal development of behavior through analysis and interpretation of research results.

31:15 Introduction to Social Psychology 3 s.h.
Research dealing with behavior of individual humans in groups as factors in social conscience, rationalization and conclusion, attitude development and change, social influence on perceptual and consequential processes, social interaction, contribu-

Courses

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Research dealing with behavior of individual humans in groups as factors in social conscience, rationalization and conclusion, attitude development and change, social influence on perceptual and consequential processes, social interaction, contribu-

For Undergraduates and Graduates

31:101 Social Psychology 3 s.h.
Current research activities in social psychology; primary emphasis on "learned" study of social behavior; critical review of current theoretical and methodological developments.

31:12 Interpersonal Dynamics in Contemporary Society 3 s.h.
Social processes affecting children's acquisition and transmission of social roles; love, conformity and deviance, identity and self-fulfillment, social roles and groups, methods of coping and adjustment.

31:12 Development of Social Behavior 3 s.h.
Basic processes affecting children's acquisition to the social environment; attachment and dependency, social initiation, imitation and mentor development.

31:14 Experimental Social Psychology 3 s.h.
Experimental approaches to attitude modification, social perception, judgments and related social processes. There is critical evaluation of methodology in representing types of problems.

31:15 Personality 3 s.h.
Determination, coherence, consequences of attitudinal functions and personality or-

31:16 Attitude Change 3 s.h.
Designs and experimental approaches to attitudinal change; laboratory methods of research; field methods of research; student's major in psychology.

31:17 Controversial Social Problems 3 s.h.
Role of social psychology as a systematic body of knowledge; its contribution to understanding, processing and development of understanding of social issues on problems which concern society.

31:16 Small Group Processes 3 s.h.
Basic work on group processes giving laboratory experiences, field studies and observations, testing theory in conformity, influence, group cohesion, consensus, group processes, responsibility, diffusion, decision-making, conflict. 31:16 recommended but not required.
31:205 Social Influences on Behavior 3 a.h.
Advantages, risks and misconceptions of studies of social influences on behavior. Judgment, attitude development and modification, group processes, self-perception.

31:208 Social Learning Processes 3 a.h.
Theories of social learning in social sciences; topics considered include observational learning, development of social stereotypes, attribution, aggression and attitudes of behavior.

31:209 Psychology of Group Behavior 3 a.h.
Theories, models and operationalizations of social perceptions of groups, leadership, group problem-solving and communication, public opinion, information and role-taking.

31:210 Advanced General Psychology 3 a.h.
Same as 31:12, but includes additional assignments for graduate students who have not had an elementary course in psychology.

31:211 Processes in Social Development 3 a.h.
Critical analyses of experimental and field studies dealing with the social development of the child.

31:212 Perceptual Development 3 a.h.
Research on review and procedures and results of research on the development of visual, auditory, and tactile perceptions.

31:213 Early Experience 3 a.h.
Theories and research on the effect of early experience on the development of behavior. Beginnings of vision, hearing, and touch, effects of early environments on development.

31:214 Learning in Children 3 a.h.
Behavioral and social learning, verbal learning and memory, and transfer of training. Open to upper-level undergraduates with permission of instructor.

31:215 Philosophies of Social Psychology 3 a.h.
Analysis and discussion of scientific methods involved in the social study of learning.

31:216 Social Psychology in Children 3 a.h.
Behavior development in social learning and response generalization. Permission: 31:223 or consent of instructor.

31:217 Advanced Developmental Psychology 3 a.h.
Analysis of development theory, methodology and research fields of investigation.

31:218 Developmental Psychology in Children 3 a.h.
Research on children's development of thinking and social behavior in interaction with environment; changes in development of behavior across age groups.

31:221 Conditioning and Learning 3 a.h.
Methods, results, and interpretations of conditioning and simple learning experiments with humans and animals.

31:222 Learning Processes in Psychology 3 a.h.
Examination of social learning processes in human and non-human learning, including operant and classical conditioning.

31:223 Sensation and Perception 3 a.h.
Psychological methods and results of research relating to perception of the environment. Adolescent undergraduates may be admitted with permission of instructor.

31:224 Verbal Processes and Language Behavior 3 a.h.
Fundamental concepts of language, acquisition, use, and comprehension; the role of language in human behavior. Open to all.

31:235 Visual Perception 3 a.h.
Sensory perception, visual data, visual perceptions, perception of visual phenomena.

31:237 Introduction to Physiological Psychology 3 a.h.
Development of behavior and function related to sensorimotor and unconscious sensory feedback. Permission: 31:223.

31:238 Sensation and Perception 3 a.h.
Sensory perception, visual data, visual perceptions, perception of visual phenomena.

31:239 Motor Mechanisms and Learning 3 a.h.

31:240 Biobehavioral and Behavior 3 a.h.
Biobehavioral and behavioral processes in the nervous system with special emphasis on chemical systems affecting brain function and behavior, and observations in elective and behavior problems, drugs, behavior and genetic observations. Permission: 31:227.

31:243 Functional Behavior in Man 3 a.h.
Psychology of behavior, behaviorism, behavior studies, behavior studies, human behavior studies.

31:244 Physical Problems of the Social Sciences 3 a.h.
Same as Philosophy 20:031.

31:245 Experimental Analysis of Behavior 3 a.h.
Introduction to digital logic and real-time computing applications in experimental psychology. Permission: elementary background in electronics and computer programming and consent of instructor.

31:246 Techniques of Psychological Research 3 a.h.
Technique, fundamentals and materials involved in psychological research, with applications to social science problems.

31:247 Psychophysiological Research Methods 3 a.h.
Fundamental laboratory course designed to acquire students with principles and methods involved in the use of signals to record psychophysiological phenomena. Permission: elementary electronics and consent of instructor.

31:250 Substance and Systems of Psychology 3 a.h.
Research on basic concepts and issues in the field of psychophysiology; emphasis on research on psychophysiological behaviors, perception, memory, and social behavior.

31:252 Statistical Analysis I 3 a.h.
Review of research methods and techniques used in a survey of research methodology, research planning, and analysis of data and research reports, major computer analysis. Permission: 31:424 or equivalent and consent of instructor.

31:254 Correlation Methods 3 a.h.
Same as Sociology 23:244 and Statistics 225:197. Prerequisites: 31:143 and 225:743:4 or equivalent.

31:255 Quantitative Methods in Psychology 3 a.h.
Advanced and modern methods necessary for understanding and use of statistical methods in psychology. Permission: consent of instructor.

31:256 Statistical Analysis II 3 a.h.
Regression and correlation, multiple and partial correlation, multiple regression and correlation analysis and analysis of variance and complex investigations and techniques. Permission: 31:255 and consent of instructor.

31:271 Applications of Multivariate Analysis 3 a.h.
Advanced study of matrix algebra and its applications. Prerequisites: 31:254 and consent of instructor.

31:272 Psychophysics, Scaling and Measurement 3 a.h.
Review and analysis of various models in perception, psychophysics and scaling. Special emphasis on signal detection theory.

31:280 Experimental Psychology 3 a.h.
Advanced study of experimental techniques in perception, experimental design and control of the experimental system.

31:281 Psychophysiological Analysis 3 a.h.
Specialized laboratory and research directed toward the study of human behavior, perception, and learning.

31:292 Psychological Research Methods 3 a.h.
Specialized course in advanced research methodology, research planning, and analysis of data and research reports; major computer analysis. Permission: 31:424 or equivalent and consent of instructor.

31:295 Research Methods in Psychology 3 a.h.
Research methods necessary for understanding and use of statistical methods in psychology. Permission: consent of instructor.

31:296 Statistical Analysis I 3 a.h.
Regression and correlation, multiple and partial correlation, multiple regression and correlation analysis and analysis of variance and complex investigations and techniques. Permission: 31:255 and consent of instructor.

31:298 Experimental Psychology I 3 a.h.
Research in experimental psychology with emphasis on research planning, research methodology, research design and control of experimental systems.

31:301 Psychological Appraisal I 3 a.h.
Psychological assessment and evaluation of individuals, administration and scoring of various psychological techniques used in the clinical assessment of children and adults. Permission: consent of instructor.

31:302 Psychological Appraisal II 3 a.h.
Specialized examination of clinical techniques in assessment and evaluation of children and adults. Permission: 31:298 or equivalent and permission of instructor.

31:305 Clinical Neuropsychology 3 a.h.
Behavioral and psychological techniques in diagnosis, research and application of psychological and neuropsychological techniques in diagnosis of behavioral and psychological problems associated with central nervous system damage.

31:308 Child Clinical Psychology 3 a.h.
Behavioral and psychological techniques in diagnosis, research and application of psychological and neuropsychological techniques in diagnosis of behavioral and psychological problems associated with central nervous system damage.

31:310 Advanced Child Psychology 3 a.h.
Behavioral and psychological techniques in diagnosis, research and application of psychological and neuropsychological techniques in diagnosis of behavioral and psychological problems associated with central nervous system damage.
A professional career in recreation and parks involves service to and with people, meeting human needs for personal, social and creative fulfillment in recreation and leisure activity. The field is characterized by growth and diversity. In the past 20 years, the number of people employed in it has doubled, to 200,000. There are opportunities for professional placement throughout the United States and abroad, in a wide range of public park and recreation settings; voluntary and social agency recreation programs; therapeutic recreation programs; school, military service, commercial and industrial recreation programs; and teaching and research.

In its recreational aspect, the profession deals with the provision of worthwhile recreational opportunities in activities ranging from music and drama to sports and tourism. The park aspect deals with the planning, design, management and maintenance of recreational land and facilities.

The Bachelor of Science Degree

For general requirements, see the College of Liberal Arts section of the Catalog.

Course requirements for the major are:

Professional Core 38 s.h.

104:60 Foundation of Recreation 104:61 Recreation Leadership
104:67 Park and Recreation Agency Orientation 104:110,111 Internship in Recreation
104:120 Introduction to Therapeutic Recreation 104:129 Administration of Recreation I
104:134 Recreation Program 104:125 Park and Recreation Facility Management
104:140 Principles of Outdoor Recreation

Related Courses and Proficiencies 4 s.h.

27:21, 22 Teaching of Recreational Sports I, II
104:132 Swimming proficiency

Area of Concentration 6 s.h.

One of the following:

Recreation and Park Administration

For students preparing for positions in which they will be responsible for organizing and administering recreation programs, facilities and departments. This concentration is oriented primarily to municipal, district and county-level recreation and park departments.

Recreation Program Leadership and Supervision

For students preparing for leadership and program supervision positions with youth-serving agencies, settlement houses, armed forces and city park and recreation departments.

Therapeutic Recreation

Therapeutic recreation focuses on preparing students to organize, plan and lead recreational programs in treatment and non-treatment settings for people who are ill, handicapped, aged, disabled and disadvantaged.

Outdoor Recreation

Focuses on preparing students to organize, plan and administer programs of outdoor recreation on the city, county and state levels, and particularly on developing cooperative inter-agency programs with schools, youth agencies and conservation groups.

Electives 28 s.h.

Internship Opportunities

The recreation education program places special emphasis on practical experience and student involvement with the profession and practitioners. Students are encouraged to attend state and national professional conferences, and every class in the professional core includes lectures by working professionals, as well as opportunities for field experience related to course content.

The practical emphasis is climaxed by a professional internship for a full semester in an agency and setting of the student's selection. The internship is designed to lead to professional placement. More than 30 placements, agencies and offices throughout the state provide field work and internship opportunities for students in the program.

Recreation Minor

Recreation education is an excellent minor for students majoring in elementary or special education.

Honors

Admission to the Honors Program in recreation education requires a formal application, completion of at least 30 semester hours of coursework at the University, completion of at least 9 of the 32 semester hours of required major coursework, and at least 3.0 grade-point average on all college work attempted and on all work accepted in recreation education.

To graduate with Honors in recreation education, the student must successfully complete six semester hours of Honors work and must pass an Honors examination. The Department offers two Honors courses—104:130 Problems in Honors and 104:192 Seminar: Recreation Education Research. With the permission of the chairman of his or her Honors committee, the student may take three semester hours of Honors work in another department.

The Master of Arts Degree

For general requirements, see the graduate college section of the Catalog.
Master of Arts with Thesis

The purpose of the thesis program for the Master of Arts degree is to provide a foundation for further graduate study. Particular emphasis is placed on techniques of research. The program requires a minimum of 30 semester hours of graduate-level coursework in recreation and related areas, including:

28:205 Techniques of Research 3-4 s.h.
225:102 Introduction to Statistical Methods 3 s.h.
79:143 Introduction to Statistical Methods 3 s.h.
104:210 Seminar: Administration of Recreation 3 s.h.
104:241 Philosophy and Trends in Recreation 3 s.h.
104:401 Seminar: Thesis I 1-3 s.h.
104:402 Seminar: Thesis II 2-4 s.h.

Depending on the student's background in the field, the student may be required to take up to 12 hours of graduate study beyond the 30-hour minimum.

Master of Arts Without Thesis

The non-thesis program for the Master of Arts degree is designed as a terminal unit of advanced study in preparation for recreation administration or supervision. The program requires a minimum of 36 semester hours in recreation and related areas, including:

104:210 Seminar: Administration of Recreation 3 s.h.
104:231 Philosophy and Trends in Recreation 3 s.h.
104:301 Research: Recreation 3 s.h.
28:205 Techniques of Research 3-4 s.h.

Faculty Roster

Associate professor Nessian; assistant professors Covington, Kummer; instructors Eignor, Hanson, Howard.

Courses

Primarily for Undergraduates

104:106 Principles of Recreation 1-2 s.h.
Basic philosophical, historical, scientific foundations and developments in leisure and recreation; function and setting of organized recreation and survey of organizations and agencies concerned with recreation.
104:61 Recreation Leadership 3 s.h.
Leadership principles and techniques; program activities.
104:64 Camp Administration 3 s.h.
Camping skills and techniques for camp counselors; ACA certification program.
106:66 Department of Rehabilitation Settings 3 s.h.
Institutional and community rehabilitation programs encompassing psychiatric, re- habilitation, orthopedic, handicapped, convalescent, aging and aged.
104:67 Park and Recreation Agency Orientation 3 s.h.
A survey of selected agencies offering recreation and park services.

For Undergraduates and Graduates

104:100 Contemporary Issues in Leisure 3 s.h.
Survey of recreation and leisure as a modern society: human and technological values as they relate to leisure. Priority for non-majors.
104:101 Readings in Leisure 3 s.h.
Current literature and programs in leisure and selected works related to specific leisure interests.
104:110 Leadership in Recreation 3 s.h.
Practical field experience arranged to include: (1) college leadership, program planning, and administrative procedure. Prerequisite: 104:102 and permission of instructor.
104:111 Internship in Recreation 3 s.h.
Continuation of 104:110.
104:112 Colloquium 0 s.h.
Current issues; required of all senior and graduate students majoring in recreation.
104:130 Introduction to Therapeutic Recreation 3 s.h.
Basic concepts of recreation's role in rehabilitation; organization and development of programs, approaches to underlying behavior of patients and adaptation of activities to basic disability area.
104:170 Role of Therapeutic Recreation in Rehabilitation 2 s.h.
Role of therapeutic recreation in total institutional and community rehabilitation ef-

104:180 Administration of Recreation I 3 s.h.
Program planning, personnel, finances and budgets, liability, areas and facilities, other administrative aspects of recreation. Prerequisite: 104:130.
104:190 Administration of Recreation II 3 s.h.
Continuation of 104:180 in areas specializing in park and recreation administra-
tion.
104:200 School and Community Recreation 3 s.h.
Role of schools in educating for leisure and survey of total community involve-
ment in recreation through school, church, volunteer agency, commercial, private, industrial, institutional, military, and other programs.
104:234 The Recreation Program 3 s.h.
Planning and evaluation of recreation program: organization, promotion, utilization of resources, use of facilities and leadership.
104:235 Park and Recreation Facility Management 3 s.h.
^Tvariables in recreation and park facility management: personnel, program, fi-
moving, design and costs.
104:245 Principles of Outdoor Recreation 3 s.h.
Administrative and technical aspects of outdoor recreation and environment, program planning.
104:250 Public Relations, Personal Finance, and Business and Facilities. ACA standing committee on long-range planning, implementation, and evaluation of all recreation aspor- of organized recreation, complete.
104:262 Principles of Outdoor Education 3 s.h.
Develop and scope of outdoor education, educational significance: philosophies, organization, facilities, research, methodology and current issues in interpretive programs for recreation and education agencies.
104:271 Physical Education 3 s.h.
Organizations, administration, and program planning for school camp, day and so-
gage into school curriculum. Same time or place: HUM 136.
104:300 Independent Study 1-6 s.h.
Investigation of problems related to specific area of interest.
104:301 Problems Seminar 1 s.h.
Discussion of special problems. May be repeated.
104:302 Seminar in Research 1-6 s.h.
Design, execution and analysis of research project.

Primary for Graduates

104:001 Problems Seminar 1-6 s.h.
Research problems before registration.
104:200 Concepts of Leisure 3 s.h.
Advanced philosophical, historical, scientific foundations and developments in be-

104:220 Recreation Services 3 s.h.
Design principles for therapeutic recreation services to assess clients, particularly handicapped children's recreational preferences and abilities, to determine their consequences and to direct therapeutic recreation activities which can better the clients' maximum recreational participation. Prerequisite: graduate status and con-
104:230 Recreation Services 3 s.h.
Development of Therapeutic Recreation Services 3 s.h.
Initiation, improvement, expansion of therapeutic recreation services for handi-
capped children, development of criteria, evaluation in program evaluation procedures, practical problems in client fields. Prerequisites: graduate status and current placement.
104:250 Seminar in Administration of Recreation 3 s.h.
Problems of administration, supervision and programming in recreation programs.
Religion

Director of School: James C. Spruill
Degree offered: Master of Arts, 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 dimension in human culture. Such understanding is not only valuable for its own sake; it is essential for responsible participation in a religiously pluralistic American society and in a pluralistic world community. Many students at the University major in other areas elect courses in religion as a 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, as it is oriented more toward understanding than toward vocation. The School of Religion is not a theological seminary. It does not prepare students for ordination, although a number of its undergraduate majors later attend theological seminaries well prepared for study in more advanced, leading toward professional careers in church-related vocations. 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.

Bachelor of Arts Program

For a major in religion, undergraduate students elect at least 24 semester hours of coursework in religion according to their own interest, provided they take a minimum of four 100-level courses in religion, one of which is ordinarily the major’s seminar (32-166 Senior Seminar). Students majoring in religion also elect 12 hours in related courses in anthropology, art, classics, history, philosophy, psychology, or sociology. The student must also fulfill the requirements of the College of Liberal Arts. The selection of the foreign language must be approved by the adviser.

Honors Program

Religious majors eligible for the Liberal Arts Honors Program may obtain a degree with Honors through satisfactory completion of an Honors essay 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:

Area A: Jewish and Christian Scriptures
  1. Old Testament
  2. New Testament

Area B: History of Christianity
  3. Post-Biblical Judaism

Area C: Theology and Ethics
  4. Early (before 1500)
  5. Modern (since 1500)
  6. American

Area D: World Religions
  7. Jewish
  8. Roman Catholic
  9. Protestant

Area E: Religion and Personality
  10. History of Religions
  11. Intensive Study of Religion in India, China, or Japan

Area F: Religion and Personality
  12. Religion and Personality Development
  13. Religion and Health

Master of Arts

The Master of Arts degree in religion requires four courses or seminars at the 600-level or above, in each of three areas, for not less than 10 semester hours of credit in each area not less than 30 hours in total. Toward the end of the fourth semester, the student writes a master's examination on the course(s) and/or seminars he or she has taken.

The student must demonstrate a reading knowledge of French or German, or a foreign language, which is related to his or her field of study and is approved by his or her adviser. A thesis is also required. It need not be formally defended except when the student's advisory committee considers it desirable. Four hours of credit for thesis research may be applied toward the requirement.

Master of Arts in Religion and Health

The contemporary study of the functions and dynamics of religion in illness and health necessitates a combination of theoretical and clinical investigation of human experience. The University Hospitals provide the clinical setting for research and training in this program. The program requires 30 semester hours of coursework. Four may be earned in thesis research. Six may be from another accredited graduate or professional school.

The program includes required courses in religion and personality, and in related fields of study and religions in America, together with other relevant courses. Knowledge of a foreign language, statistics or another research tool may be required, at the discretion of the student's advisory committee. In addition to the general requirements for admission to the Graduate College, the School generally requires an on-campus interview of applicants to this program; however, the interview may be conducted off campus by an accredited member of the Association for Clinical Pastoral Education.
Doctor of Philosophy

The student may elect one of two options for doctoral study:

Option 1
In consultation with the School faculty, the student develops a program which will give him or her a comprehensive knowledge of at least three of the five areas in which the School offers graduate study.

Major written qualifying examinations, covering coursework and readings in each of the three selected areas, provide an initial determination of the student's progress toward the ultimate objectives of the doctoral program. Students who hold the Master of Arts degree in religion, or the Bachelor of Divinity or an equivalent degree, must take the qualifying examinations within two years after beginning the doctoral program. Other students must take them within three years after beginning the program.

Generally, students must pass the Graduate School Foreign Language Tests in French and German before taking the qualifying examinations. In all cases, both tests must be passed at least 12 months prior to the comprehensive examinations. If the student's program warrants it, and the faculty permits it, another language may be substituted for either French or German. There are also special language requirements in some areas. Students in the New Testament area, for example, must satisfy a requirement in Greek.

Not later than two months after passing all three qualifying examinations, the student and advisor must establish a three-member committee for comprehensive examinations. The committee will determine three subjects for the comprehensive examinations, including one subject closely related to the student's dissertation topic.

The plan of study for the comprehensive examinations must include 10 semester hours of coursework at the 100-level or above, outside the School, with grade of A or B; 10 semester hours of coursework in a field or fields of religious study outside the student's field of major interest, with grades of A or B; and a maximum of 10 semester hours of coursework that indicates that the student possesses the skills required for doctoral-level work in his or her field of major interest.

The student must pass an oral examination on the dissertation topic no more than 12 semester hours of credit will be allowed for the dissertation.

A student whose grade-point average in graduate study at the University falls below 3.0 will be placed on probation. A student who does not raise the average up to 3.0 within one semester of probation will disqualify from further graduate study in the School of Religion.

Option 2
A student choosing this option pursues one of four separate programs:

1. Judaism and Christianity in the Hellenistic World; History of Theology and Religious Thought in the West; Contemporary Theology and Religious Thought; or Studies Relating Theology and Other Academic Disciplines.

The student may apply for admission to an Option 2 program before or after enrolling for graduate study.

The student is expected to have passed the language requirements (see Option 1) by the end of the second year of graduate study, and at least 12 months before taking the comprehensive examinations.

Beginning with the third semester and continuing each semester up to the semester of the comprehensive examinations, the student must submit to the faculty in his program area copies of the paper best representing his or her work that semester.

Depending on the student's program, the comprehensive examinations will cover three or four fields. One field will be directly pertinent to the student's dissertation subject.

Within three months after passing the comprehensive examinations, the student must submit a dissertation prospectus to his or her advisor. The advisor will then assemble a dissertation committee to discuss the prospectus and guide the dissertation work.

A student who fails all of the comprehensive examinations may, with faculty approval, complete a thesis for a terminal Master of Arts degree.

Detailed information about any of the programs may be obtained from the director of the School.

Faculty Roster

Courses

Primary for Undergraduates

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Semester Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>32:1 Old Testament Survey</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>34:2 Old Testament Survey</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>1 Rings through II Chronicles</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>12:17 Minors Introductory to Jesus</td>
<td>2-3 a.h.</td>
</tr>
<tr>
<td>Works selected include: Jesus and John, Herod; Schmidhein, The Person and Life of Jesus; T. Lambrichts; B. B., The Last Testament of Christ; D. A. C. Laurence, The Man Who Died; F. Thompson, The House of Heaven; the file, Telch.</td>
<td></td>
</tr>
<tr>
<td>32:18 Sondelham, Apocryphal and Anthology in the Ancient World</td>
<td>2-3 a.h.</td>
</tr>
<tr>
<td>32:21 Introduction to Hebrews</td>
<td>2-3 a.h.</td>
</tr>
<tr>
<td>Principal topics of the Bible; development since Vetus II.</td>
<td></td>
</tr>
<tr>
<td>32:22 Introduction to Catholicism</td>
<td>2-3 a.h.</td>
</tr>
<tr>
<td>Continuation of 32:21; taught to several and Tollenses of the Catholic faith.</td>
<td></td>
</tr>
<tr>
<td>32:26 Religion in Human Culture</td>
<td>4 a.h.</td>
</tr>
<tr>
<td>For undergraduate religion majors. Credit is assigned for both major and core course requirement. Same as 32:11. May be repeated as independent study.</td>
<td></td>
</tr>
<tr>
<td>32:26 Religion in Human Culture</td>
<td>4 a.h.</td>
</tr>
<tr>
<td>Correspondence of 32:26. Same as 32:12. May be taken as independent study.</td>
<td></td>
</tr>
<tr>
<td>34:15 Living Religions of the West</td>
<td>2-3 a.h.</td>
</tr>
<tr>
<td>Religion, thought and practice in Westernized areas, Western Asia, North Africa, Europe and America.</td>
<td></td>
</tr>
<tr>
<td>38:47 The Study of Religion and Philosophy</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>Examination of the role of religious philosophy in Western society. Together with theological and psychological interpretation of their experience.</td>
<td></td>
</tr>
</tbody>
</table>
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 except engineering. Neither department offers a degree, but both offer second lieutenant commissions. The commission is comparable to a degree in that it represents completion of a high academic standard in leadership and management. It is a requisite for entry into the military profession as an officer and is an important indication of potential employer.

Undergraduate Program

The purpose of the ROTC departments is to educate cadets to be officers in the United States Army or Air Force. The subjects which do this provide military 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 $9,040 a year (flying commissions start at $10,500). They serve in any one of 15 Army branches or 44 Air Force functional areas. That commissioned military service is invaluable leadership experience in other fields is borne out by the fact that a remarkably large number of people is key leadership positions of government and industry have ROTC backgrounds.

The curriculum consists of a series of variable-length, interspersed 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 have no court convictions (waivable).

The Two-Year Program

The ROTC curriculum normally spans four years; it can be completed in three or three and a half years by compressing 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 regular ROTC curriculum. Priority for summer camp assignment is given by the Army to community college students, and by the Air Force to pilot or navigator cadets.

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 on the basis summer camp are a "free" look at the Army or the Air Force. Entry into the last two years of ROTC is competitive and entails a commitment to serve two years as an Army officer or four years as an Air Force officer. Cadets taking Army or Air Force flight training incur an additional one-year commitment. All recipients of ROTC scholarships accept a four-year commitment.

Advanced Placement

Service veterans and students with other ROTC experience can get full credit toward commissioning (cost gratuation) for some ROTC courses by providing proof of this background to the appropriate Department Head.

Financial Assistance

ROTC scholarships providing tuition, books, laboratory fees and a $100-per-month tax-free subsistence allowance are available to high school graduate ROTC cadets in a two-year program. (See "Scholarships and Loans.")

All cadets in the last two years of ROTC receive $100 monthly as a tax-free subsistence allowance. Students attending the summer camps are paid while there and receive travel expenses.

Uniforms and books for classes taught by military faculty are furnished, and a $300 uniform allowance is provided for commissionees.

Commissioning

Cadets are commissioned as second lieutenants when they successfully complete ROTC and receive their baccalaureate degrees. 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 accredited in the college of Medicine or Dentistry can complete their education and go on active duty as doctors or dentists. Cadets who pass a state bar examination can apply for a commission in the Judge Advocate General Corps. Doctors, dentists and JAG officers enter active duty as captains.
Graduate Studies

ROTC does not have a graduate program. However, graduate students can enter the two-year program and receive all financial benefits accompanying scholarships.

Special Activities

The military departments sponsor several special activities which contribute to cadet and university life. The Preparing Rifles, Black Beret, and Arnold Air Society are military fraternal organizations engaged in military intercollegiate competitions and service activities. The Cadets and Angel Flight are women's organizations auxiliary to Preparing Rifles and Arnold Air Society and participate with them in many activities. The departments also sponsor a small-bore rifle team.

ROTC cadets compete for individual national and local awards presented for outstanding achievement in leadership, academics, citizenship, athletics and military proficiency. (See "Awards, Honors and Prizes.") The departments sponsor ceremonial and social activities throughout the year, including the Military Ball, Joint Awards Ceremony and Governor's Day.

Aerospace Military Studies

Department Head: Lieut. Col. Raymond B. MarQueen

The normal sequence of courses required for successful completion of the Air Force ROTC program includes courses from other departments in communication skills, history and political science. Variations in the program outlined below may be approved by the department head.

First Year

23A:11 Aerospace Military 100 1
23A:98-97 Air Force ROTC Corps Training 0

Second Year

30:3:3 Introduction to World Politics 4
23A:96-97 Air Force ROTC Corps Training 0
23A:31 Aerospace Military 200 1

Cadets who pass qualification tests and are selected on a competitive basis attend the summer field training session between third and fourth years; those non-qualifying completing field training may continue into the last two years of Air Force ROTC.

Third Year

23A:112 Aerospace Military 300 3
23A:96-97 Air Force ROTC Corps Training 0

Third-year cadets are required to take one of a select group of 100-level history or political science courses during second semester.

Fourth Year

23A:114-115 Aerospace Military 400 6
23A:96-97 Air Force ROTC Corps Training 0
23A:30 Aerospace Military Studies Flight Instruction 2

A flight ground school course is required for fourth-year cadets in the flight instruction program.

Special Facilities and Equipment

Throughout the academic year, classroom instruction is supplemented with one- to two-day visits to Air Force bases. Most cadets have the opportunity to make at least one visit each semester. 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 requirement 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 instructors must complete the comprehensive Air Force Academic Instructor Course.

Unique Program Aspects

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 cadet orientation, survival training, junior officer training, aircraft and aircraft indoctrination, physical training, organization and function of an Air Force base, career orientation, small arms familiarization, and first aid.

Faculty Roster

Air Power 100 Instructor: Captain Hoyt; AS-200 instructor: Lieut. Col. MacQueen; Commandant of cadets and AS-400 instructor: Major Glass; AS-300 and flight program instructor: Captain Workether.

Military Science

Department Head: Colonel James J. McAlmon

Variations in the following normal military science curriculum may be permitted by the Department head.

First Year

23:10-20 Military Science I 2
23:98-99 Leadership Laboratory 0

Second Year

23:34 Army Analysis 3
23:44 Military Science II 1
23:98-99 Leadership Laboratory 0

Cadets passing qualification tests and selected on a competitive basis may enter advanced courses:

Third Year

22:116-117 Military Science III 5
23:98-99 Leadership Laboratory 0

Between third and fourth years all cadets attend six-week summer camp in nine-week session at school and may volunteer for three-week paramedical school; participants paid approximately $1000 to $1000 and travel expenses.
Fourth Year
23/16:119 Military Science IV 4
23/16:19 Leadership Laboratory 0

Cadets in the advanced course must take at least one course in the Department of History or the Department of Political Science; qualified fourth-year cadets may volunteer for 23/95 Army Flight Instruction.

Special Facilities and Equipment
The Department utilizes the Cordova Reserve Training Area, two farms near Iowa City, and Patissier Park for practical field problems. A variety of military equipment, such as helicopters and FM radios, is used in the practical leadership exercises and to support the Pershing Rifles.

Faculty
All faculty members are Army officers who were nominated to an appointment 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 and one and a half years of teaching experience. All have master's degrees and are qualified in at least one military technical specialty area

Unique Program Aspects
The Department sensibly conducts an all-day field exercises in the fall. Military equipment is used.

Faculty Roster
Commandant of cadets Major Paul (Corps of Engineers); assistant course instructors Major Paul, Capt. Anderson (Field Artillery); basic course instructors Capt. Parlow (Ordnance Corps), Capt. Mutiloy (Infantry).

Courses
Aerospace Military Studies
General Military Education Program
Freshman Year
22A:11 Aerospace Military 100 4 a.h.

Preliminary course in aerospace engineering, design, and the history of aerospace. Emphasis on the science of aerospace. Designed for all students in the University.

Sophomore Year
22A:51 Aerospace Military 300 4 a.h.

Preliminary course in the development of air power from balloons to balistic missiles. Emphasis on the science of air power. Designed for all students in the University.

Professional Officer Course Program
Junior Year
22A:112 Aerospace Military 300 4 a.h.

Preliminary course in the development of air power from balloons to balistic missiles. Emphasis on the science of air power. Designed for all students in the University.

Senior Year
22A:114 Aerospace Military 400 3 a.h.

Preliminary course in the development of air power from balloons to balistic missiles. Emphasis on the science of air power. Designed for all students in the University.

Military Science Courses
23/16 Military Science I 1 a.h.

Introduction to the science, art, organization, and development of U.S. Army, aviation, and missile and space programs. Emphasis on the science of war. Designed for all students in the University.

23/16 Military Science II 1 a.h.

Introduction to the science, art, organization, and development of U.S. Army, aviation, and missile and space programs. Emphasis on the science of war. Designed for all students in the University.

23/16 Military Science III 1 a.h.

Introduction to the science, art, organization, and development of U.S. Army, aviation, and missile and space programs. Emphasis on the science of war. Designed for all students in the University.

23/16 Military Science IV 1 a.h.

Introduction to the science, art, organization, and development of U.S. Army, aviation, and missile and space programs. Emphasis on the science of war. Designed for all students in the University.
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 semester paper comprises each work unit of two semester hours. Students may take up to eight semester hours of Honors in Russian. A comprehensive examination is given in the senior year.

Master of Arts Program

The major emphasis of the graduate program in Iowa is literary, through improvement and refinement of the students' Russian is not neglected. Graduate students therefore study the development of Russian literature, as a national phenomenon and as a part of European literature, and are expected to analyze writers' style, perspective literary devices, recognize literary influences and develop the ability for sound criticism of form, content and language of works in all genres. All Master of Arts degree candidates are responsible for reading 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.

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:

- 41:105, 106 Second-Year Russian 8 s.h.
- 41:111, 112 Intermediate Composition and Conversation 8 s.h.
- 41:113 Advanced Composition and Conversation 3 s.h.
- 41:251 Russian Literature in Translation (1800-1850) 3 s.h.
- 41:252 Russian Literature in Translation (1860-1917) 3 s.h.
- 41:253 Russian Literature in Translation (1917-1930) 3 s.h.
- 41:254 Russian Literature in Translation (1930-1960) 3 s.h.
- 41:255 Russian Literature in Translation (1960-1977) 3 s.h.
- 41:256 Russian Literature in Translation (1978-1990) 3 s.h.
- 41:171, 172 Readings in Representative Russian Literature 6 s.h.
- 41:173 Readings in Russian Civilization 3 s.h.

For a more comprehensive degree 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.
Science Education

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 under-graduates 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 selecting foreign study programs and institutions best suited to their educational objectives. Frequently, students from Iowa have studied at a summer language institute in Munich, Germany, where an Iowa faculty member is on the staff.

Faculty Roster
Professor Luxemburg; professor emeritus Scribner; assistant professors Glas, Weber, Innseniel Geffand, Lannea, Parralt.

Courses
For Undergraduates and Graduates
41:102 Elementary Russian
4 s.h.

41:103 Elementary Russian
4 s.h.

41:105 Second-Year Scientific Russian
6 s.h.

Emphasis on reading scientific and technical Russian material; for students, especially new in Russia in science, who need primarily to develop reading ability for research purposes. Prerequisite: 41:102 or equivalent.

41:104 Second-Year Scientific Russian
4 s.h.

Prerequisite: 41:105 or equivalent.

41:106 Second-Year Russian
4 s.h.

Standard upper-level course recommended for students qualifying their foreign language requirement for B.A. degree and desiring further training to active use of the language. Prerequisite: 41:105 or equivalent.

41:106 Second-Year Russian
4 s.h.

Prerequisite: 41:105 or equivalent.

41:107 Supplemental Russian Reading
2 s.h.

Prerequisite: 41:105 or equivalent and consent of instructor.

41:108 Special Readings
3-6 s.h.

Prerequisite: 18 semester hours of language instruction.

41:111 Intermediate Composition and Conversation
4 s.h.

Prerequisite: 41:105 or equivalent.

41:123 Intermediate Composition and Conversation
4 s.h.

Prerequisite: 41:111 or equivalent.

41:147 Advanced Composition and Conversation
3 s.h.

Prerequisite: 41:142 or equivalent.

41:148 Advanced Composition and Conversation
3 s.h.

Prerequisite: 41:113 or equivalent.

41:150 Methods, Russian
3 s.h.

41:151 Russian Literature in Translation (1860-1900)
3 s.h.

Combined in English. Same as School of Letters 41:151.

41:152 Russian Literature in Translation (1900-1927)
3 s.h.

Combined in English. Same as School of Letters 41:152.

41:155 Soviet Russia
3 s.h.

Combined in English. Same as School of Letters 41:155.

41:158 Soviet Russia
3 s.h.

Combined in English. Same as School of Letters 41:158.

41:171 Readings in Representative Russian Literature
3 s.h.

Combined in Russian. Prerequisite: 41:112 or equivalent.

41:172 Readings in Representative Russian Literature
3 s.h.

Combined in Russian. Prerequisite: 41:171, but may be taken as independent work. Prerequisite: 41:112 or equivalent.

41:181 Soviet Literature in Translation
3 s.h.

Combined in English. Same as School of Letters 41:181.

41:182 Russian Civilisation
3 s.h.

Combined in English.

41:183 Honors Program Russian
May be repeated to maximum of eight semester hours. Prerequisite: consent of Department

Courses Primarily for Graduates
41:201 19th-Century Russian Literature
3 s.h.

41:202 Old Russian Literature
3 s.h.

41:211 19th-Century Russian Literature
3 s.h.

41:212 19th-Century Russian Literature
3 s.h.

41:213 20th-Century Russian Literature
3 s.h.

41:215 20th-Century Russian Literature
3 s.h.

41:250 Pracseutical, Research Methods
3 s.h.

41:252 Seminar: Russian
3 s.h.

41:253 Seminar: Professional
3 s.h.

41:254 Seminar: 20th-Century Literature
3 s.h.

41:255 Seminar: Comparative
3 s.h.

41:256 History of the Russian Language
3 s.h.

41:263 Old Church Slavonic
3 s.h.

41:278 Special Thesis
3 s.h.

41:310 Master's Thesis
3 s.h.

Science Education

Coordinator: Robert E. Yager

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 levels—kindergarten through graduate programs—as well as in science education. The Department is the center for several institute efforts, special projects, curriculum committees and professional societies.

Current research being carried on at the Science Education Center includes philosophical and historical foundations 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 previous work in education and
is primarily designed for persons who want to become teachers after they have completed the bachelor's degree. Courses in general psychology and American government should have been completed before applying for such degree candidacy. Eighteen semester hours are required in earth, life or physical sciences. Credit for 97:128 Meaning of Science and 97:130 History of Science must be included in the 18 semester hours, unless equivalent courses were a part of the undergraduate program of the candidate. Credit in mathematics can be approved by the advisor. In education, 21 semester hours are required for those who have completed three or more semester hours of undergraduate education courses.

Master of Science Degree Without Thesis

The non-thesis program is the one which is most appropriate for teachers who plan to remain in the classroom. It is not a research degree and is not recommended for students who plan to continue their education beyond the master's degree level. A total of 36 semester hours is required for the non-thesis 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, psychology, 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 non-thesis 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 be 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 candidate is concentrating his work. An oral examination may be required by the examining committee. For those persons in the thesis program, oral defense of the thesis must be scheduled and approved by three members of the graduate faculty.

Specialties: 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 those 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 28 semester hours, in supportive sciences, 10 semester hours in related fields and 22 semester hours in science education, including research and internship credit. The comprehensive consists of a three-hour examination in science area, a three-hour examination in a supporting field and a three-hour examination in science education. The comprehensive must be completed 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 results and interpretation of a special field research project must be scheduled and approved by three persons 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 experiences are generally incorporated into the degree program. The student should have a general knowledge of the fundamentals of at least one science area, as evidenced by the completion of a general comprehensive examination. Upon completion of this degree, each candidate will have at least the equivalent of a master's degree in education as well as in one area of science. Both educational and scientific research competencies are to be demonstrated by a study which could result in a publication. The Ph.D. dissertation will be a scholarly work which will be the culmination of the candidate's principal research effort. Minimum requirements beyond the master's degree include:

- Twenty-eight semester hours in one of the following areas: biological sciences, physical sciences or earth sciences; should not emphasize the same area as that of the first field 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, and/or microbiology.
- Two semester hours of special research in science; and
- Twenty-eight semester hours of education, including science education and educational research.

There are no specific tool requirements such as foreign languages; however, the student and advisor plan a program to provide competency in educational statistics and computer programming.

The comprehensive examinations consist of a one-hour examination in science education, a three-hour examination in a major area of science and a three-hour examination in a minor area of science.

Financial Aid

Provision is made for advanced graduate students in science education to serve as laboratory instructors in some University science courses and as instructors in the College of Education. Research and teaching assistantships are offered in the field of science education. These are in addition to financial aid available to University students generally (see "Scholarships and Loans" and "Graduate College").

Faculty Roster

Professor Morgan; associate professor Cossman, Phillips; assis-
Social Studies Education

Chairman: John H. Haas
Degree offered: B.A., M.A., Ph.D.

Undergraduate Program

The major in social studies education is a broad, interdisciplinary, nonprofessional major. It provides an excellent foundation for careers in law, social work, religion, urban planning and development, and government service at all levels.

The program's major purpose, however, is to provide a broad yet comprehensive education for those preparing to teach in secondary education. Together with the professional requirements for certification, this major meets the standards established by the North Central Association of Colleges and Secondary Schools.

There is a good deal of flexibility in the program and, in consultation with an advisor, it can be tailored to the needs and interests of the individual student. All of the coursework is taken within the seven cooperating departments.

The B.A. in social studies consists of a total of 54 semester hours distributed as follows: 14 semester hours in the Department of History, including a minimum of eight semester hours of the history of the United States; eight semester hours each in the departments of Economics, Political Science, Sociology, and Geography; and eight semester hours of elective work, which may be in Anthropology or Psychology, or may be distributed among one or more of the seven departments.

Students pursuing a social studies education major will be engaged in survey courses introducing them to the various social sciences. But many of the departments offer independent study and readings as alternatives to formal classes. There is no separate Honors Program in social studies education. Students who qualify are encouraged to do their Honors work in the social science department in which they wish to concentrate their work.

Admission Requirements

Students wishing to major in social studies education 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 given only to students who have a minimum grade-point average in all college work undertaken in the cooperating departments.

Master of Arts

The interdisciplinary nature of the Master of Arts degree in social studies education 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 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 36 semester hours is required under either plan. These 38 semester hours may be distributed in one of two ways:

1. In Plan A the candidate does his or her work in three of the seven cooperating departments: Anthropology, Economics, Geography, History, Political Science, Psychology, and Sociology. A minimum of 10 semester hours is required in each of the seven fields chosen. The remaining eight semester hours may be taken in one of the three fields or distributed among them.

2. In Plan B the candidate does his or her work in two of the cooperating 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. The oral portion is conducted by the candidate's committee as a whole.

Candidates in this program may have a wide variety of professional 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 social sciences 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 sciences 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 in the major.

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 studies. 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.

The emphasis in the doctoral program is on broad but thorough grounding in two of the academic areas chosen from history and the social sciences, and specialization in some aspect of professional education.

The program consists of a minimum of 90 semester hours of coursework and dissertation credit beyond the bachelor's degree.
and exclusive of all 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 or sociology—and professional education. Depending upon the background and needs of the candidate, work in the two disciplines chosen will comprise between 60 and 75 of the total 90 semester hours, work in education between 25 and 40.

Depending upon the areas of study chosen by the candidate, there will be opportunity for regular class work, small group instruction, internship, independent study, field work and laboratory and computer experience. Seminar and advanced work in courses numbered 200 or above is required in each of the three areas of study.

After most of the coursework has been completed, a qualifying examination of approximately nine hours—three hours in each of the three fields of study—is required. When the dissertation has been completed, the candidate will defend it orally.

The research problem may be in either of the two academic fields chosen for study, or it may be related to social studies education.

Admission Requirements
Candidates for the doctorate in social studies education must have earned a bachelor's degree in history or one or more of the social sciences as an accredited institution, and 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
Students in social studies education have access to the facilities and services of the cooperating departments and the College of Education. 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, consultative work and in working with schools in curricular revision.

Faculty Roster
Professor Hathaway; associate professor Flatch.

Courses
Coursework undertaken for social studies education degree consists largely of offerings in cooperating disciplines—anthropology, economics, geography, history, political science, psychology and sociology—and the College of Education. However, candidates for advanced degrees are encouraged to elect one or both of these courses in social studies education.

58:201 Individual Instruction in Social Studies Education 1-3 s.h.
Individual readings, field studies and independent projects, focus in history and social sciences or in problems of professional education. May be repeated. Prerequisite: consent of instructor.

Social Work

Department: Thomas H. Wate
Associate Director: Ralph E. Anderson
Degree offered: B.A., M.S.W.

Most social work positions involve working with individuals, groups, organizations and communities. The conditions of practice are quite varied. The range covers public or governmental agencies, private non-profit agencies and independent private practice settings. Social work is practiced in agencies where the central function is mainly other than social work (e.g., medicine or education).

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 intended primarily to provide basic preparation for direct entry into social work practice. In the context of a broad liberal arts education, the program focuses on general practice in social work, rather than specialization. Several groups of student goals are encompassed—employment in the field of social service open to persons with the B.A. degree (e.g., aspects of public welfare, family and children's services, health, corrections and certain group-serving organizations); establishment of a base for graduate study, especially in social work; provision of knowledge for use in allied professions; and broad preparation for informed community participation.

Requirements
Undergraduate students majoring in social work must satisfy the general College of Liberal Arts requirements, excluding the social science core. The following courses are required for the major:

30:1 Introduction to American Politics 4 s.h.
or
30:100 American Political System 4 s.h.
31:1 Elementary Psychology 4 s.h.
or
31:3 General Psychology 4 s.h.
34:1 Introduction to Sociology: Principles 4 s.h.
68:1 Principles of Economics 4 s.h.
or
68:2 Principles of Economics 4 s.h.
or
65:06 Price and Employment Theory 4 s.h.
42:108 The Field of Social Work (same as Sociology 34:108) 4 s.h.
42:131 Human Behavior in the Social Environment 3 s.h.
42:141 Social Work Practice 1 3 s.h.
42:162 Social Work Research 3 s.h.
Joint Degree Programs

Twelve credits of the social work program can be applied to a joint degree in either law or urban and regional planning. If admission to these programs is approved through separate application, other joint degree opportunities may also be available. (The School of Social Work should be advised of the student’s intentions to pursue joint degrees.)

Admission

Applications for graduate admission are accepted after October 1 for entrance the following August, which is the usual starting time for full-time students in the M.S.W. program. Early application is necessary.

The School offers a special part-time study program leading to the M.S.W.; applications may be made to begin this program in any session.

To qualify for admission, the applicant must meet the general requirements for admission to the Graduate College (see "Graduate College"), and have approved the social work faculty committee on admission. Among the bases for committee decision are the applicant’s experience record, references and interviews.

Faculty Roster

Professor Seidel, Waltz; professor emeritus Glick; associate professors Anderson, Good, Johnson, Frone; assistant professors Abel, Hackethal, Johnson, Maya, Polakoff, Williams, Yunker; instructors Carter, Lowe, Rhudi, Taper, lecturer Devor, McNamara, Moses, Oberholtz, Rin nostalg, Robinson, Roth; practicum instructors Altrontrum, Burch, Devor, Dowler, Fuller, Harris, Hoogkirk, Kelly, Montiel, Mueller, McKay, Omsvedahl, Schmitt, Turner, VanHove.

Courses

Graduate Program

The curriculum for the Master of Social Work degree emphasizes the diversity of social work practice, the common and differential use of knowledge and the importance of understanding one’s self. The curriculum is constructed to provide a common core of knowledge the first year and permit intensive study in areas of special interest the second year.

The program is continuous, spanning four semesters over 16 months. There are four interdependent course sequences: social work practice, human behavior in the social environment, social welfare program and policy, and practicum (field work). All students take courses in each sequence and select areas for more intensive study. The practicum ordinarily begins in the second semester of the first year and continues in the middle of the final semester. Some classroom courses are taken concurrently with the practicum.

The M.S.W. degree requires at least 52 semester hours of credit in graduate courses approved by the School; of these, at least 24 must be earned after admission to the Graduate College at The University of Iowa. Students who have completed an accredited undergraduate major in social work may be permitted to qualify for the degree with less than 52 credit hours, but in no case with less than 40. Application of this 12-credit reduction will be negotiated with the student advisor. No credit earned by correspondence study will be applied.

The student must have at least a 2.5 cumulative grade-point average on a 4-point scale, and must have satisfactorily completed all required M.S.W. coursework, including a research requirement.

For Graduate and Undergraduates

42:171 Legal Foundations of Social Welfare

2-3 s.h.

Statutory basis of social welfare provisions and legal aspects of administering modern social welfare services.
Sociology

42112 Human Sexuality
3 s.h. Physiological and sociological aspects of human sexuality; processes defined by needs of the group. Same as Home Economics 17:117 and Nursing 96:112.

42153* Human Behavior in the Social Environment I 3 s.h. Introductory review of scientific approaches to understanding human behavior; social systems framework used to organize review content; changing character of social and cultural forces and their impact upon typical family and society; processes of personality growth, development, and modes of adapting to social systems.

42154* Social Work Practice I 3 s.h. Survey of social work practice; common conceptual bases for social work practice; lab experiences in interpersonal skills.

42155 Social Work: Racism and Discrimination 2 s.h. Consideration of consequences of racism and society's responses.

42156 Community Mental Health
Theory and organization of comprehensive community mental health centers, with special concern for comprehensiveness of service, availability of services, continuity and building interrelationships with other service systems.

42164 Social Work Research
3 s.h. Selected research skills appropriate to participation in social work research; emphasis on formulating meaningful research questions, research techniques, research limitations; sampling, data collection, classification, analysis, presentation of findings.

42171* Social Welfare Program and Policy I 3 s.h. Concepts of social policy examined and defined by various authors; functions of social policy, processes of policy analysis, formulation and implementation as applied along with interventions of social policy, social problems and social priorities.

Primarily for Graduates

42170 Human Behavior in the Social Environment II 3 s.h. Major personal and social stress situations; range and variability of adaptive responses to these stresses, within social systems context; sources and manifestations of social dysfunction; assessment approaches to evaluation of social functioning.

42172* Social Welfare Program and Policy II 3 s.h. Knowledge and strategies used in social work, implementation and evaluation of social policies and social services with emphasis on the methods to which social work can contribute to policy and program evaluation and change.

42175 Selected Aspects of Social Work and Social Welfare
Cross-cultural study of selected topics in the social work/social welfare field.

42176 Social Services on the Frontier
3 s.h. Perspective for social service workers and of society, changes and implications for society.

42200-324 Human Behavior in the Social Environment:
Selected Aspects IB-II 4-4 s.h. Major personal and social stress situations; range and variability of adaptive responses to these stresses, within social systems context; sources and manifestations of social dysfunction; assessment approaches to evaluation of social functioning.

Human development and behavior of indi-
ciduals, groups, and organizations. Focuses on the development of theory and practice that influences patterns of behavior; certain topics may be selected for special study concerning conflict and interests, i.e., social and economic inequality, contem-
porary views of social dysfunctionality, variability.

42208 Human Behavior: Selected Aspects II 3 s.h.
Further consideration of common conceptual base of social work practice; special emphases on conflict and interest, differential social work experiences.

42245-344 Social Work Practice: Selected Aspects II-IV 3-4 s.h. Common and different social work methods and practices based on personal and social systems, personal-social problems and processes, groups, families, i.e., measures of family life in crisis, social actors, supervision.

42353-354 Social Welfare Policy: Selected Aspects II-IV 3-4 s.h. Legal, political, economic, social, sociological, historical, philosophical and psychological aspects of the development of social work and social welfare programs developed and used as means of analysis: study of social and economic systems and the role of social work in social policy formulation, economic and political considerations in social policy formulation, community mental health, social policy and family.

42386* Advanced Social Work Research
3 s.h. Participates in one of the following: completion of published reports of research; practice in the collection, analysis and reporting of data; research projects. May be repeated.

42750-474* Practicum in Social Work 1-2 s.h. Social work practice under direction of practicum teachers; understanding and use of knowledge and skill acquired in social work practice; knowledge and skill which differ within each area of social work intervention; emphasis on integration of learning from entire curriculum.

42795 Urban Growth in Developing Countries 3 s.h. Cross-cultural and interdisciplinary analysis of problems associated with urbanization and development in the developing nations. Same as Economics 60:275, Sociology 32:275, Geography 44:275, Urban and Regional Planning 102:275, Anthropology 115:275.

42811 Individual Study 3 s.h. Major topic in student's curricula is carried out under direction of faculty mem-
ber, including credit for group participation.

*Required in the M.S.W. program.

Sociology

Chairman: John R. Bratton
Degrees offered: B.A., B.S., M.A., Ph.D.

Undergraduate Programs

An undergraduate major in sociology provides a liberal arts edu-
cation, and is not specifically career-directed. In terms of career preparation, however, completion of bachelor's degree in sociology may provide a desirable background for employment which does not require advanced degree work, such as social science teaching in secondary schools; for graduate study leading to employment in related fields such as social work; or for graduate study preparatory to college or university teaching and research in sociology.

Undergraduate students majoring in sociology should plan their programs in joint consultation with a sociology adviser and an adviser from the intended career field.

In addition to major programs, the Department provides supportive coursework of value to undergraduate students in a number of fields, particularly other social sciences, business administration, elementary education and nursing.

Degree Requirements

An undergraduate student majoring in sociology may elect either a Bachelor of Arts or a Bachelor of Science degree program.

Students interested in careers in the physical, biological or so-
cial sciences are advised to seek the Bachelor of Science degree.

Both programs require 26 semester hours of coursework in sociology, including 34:1 Introduction to Sociology; Principles. 14-2 Introduction to Sociology; Problems. 24-10, 11 Theory, Research and Statistics and 12 hours of electives. The two-semester theory, research and statistics sequence should be taken early, to maximize the student's capacity to benefit from the other sociology courses.

The Bachelor of Science program also requires either 34:12 Logic of Science, 26:103 Introduction to Logic or 26:104 Intro-
duction to the Philosophy of Science, a year's work in mathe-
matics and 22:3-20 Elementary Statistics and Quantitative. To satisfy the mathematics requirement, the student may select a-
lect of two of these courses: 22M:4 Matrix Algebra, 22M:7 Quantitative Methods I or 22M:20 Elementary Functions; or complete both 22C:1 Survey of Computing and 22C:7 Introduc-
tion to Computing with Fortran. Students with exceptionally strong high school mathematics backgrounds may substitute the more advanced 22M:25, 26 Calculus I, II sequence for the first option.
All students are advised to take six semester hours of course work in anthropology, economics, geography, political science or psychology, and at least one basic course in history or philosophy. Students planning to qualify for high school teaching should note that certification requires eight semester hours of coursework in an allied field.

Honors
Graduation with Honors in sociology requires the inclusion of 34-90 in The Development of Modern Social Theory and 34-97 Honors Research in the major program. The Honors candidate must also have an Honors advisor, and must take an Honors exam at the end of the senior year.

Graduate Programs
The graduate program in sociology is career-oriented. It emphasizes the education of professional sociologists for teaching and research in colleges and universities.

The Department also provides professional training in deviance control. Students interested in this type of training enroll in the Master of Arts degree with concentration in criminal justice and corrections.

Master of Arts
The Master of Arts degree in sociology requires 30 semester hours with thesis, 38 semester hours without thesis. The program without thesis is intended for persons who desire a terminal degree and for whom a wider range of course content in sociology is appropriate.

All candidates for the Master of Arts degree must complete 34-201 History of Sociological Theory, 34-202 Sociological Theory, 34-214 Elementary Statistics and Data Analysis and 34-215 Sampling, Measurement and Observational Techniques, with grades of B or higher.

M.A. with Concentration in Criminal Justice and Corrections
The Master of Arts degree with concentration in Criminal Justice and Corrections provides the student with a broad education in the social and behavioral sciences, knowledge of criminal law and procedure and administration of justice, an understanding of the administration and operation of correctional and 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.

Iowa penal institutions, training schools and correctional agencies are used as laboratories for this program. Successful completion of this program requires a minimum of 45 semester hours and leads to an M.A. degree in Criminal Justice and Corrections.

Doctor of Philosophy
The Doctor of Philosophy degree in sociology requires a minimum of 37 semester hours of graduate-level coursework, including the post-M.A. course 34-216 Intermediate Statistics and Data Analysis and 34-217 Theory and Research Design; comprehensive examinations; and a dissertation.

All doctoral candidates are expected to be competent in the major field areas of sociology—theory, history of theory, methodology and statistics. In addition, each is examined over one major area and one minor area chosen from among the areas currently represented on the faculty, such as social psychology, deviance and control, family analysis, political sociology, community, organizations, theory, methods and statistics and sociology of medicine. A student may select a field area for the major or minor area of concentration, but not for both.

A detailed statement of regulations for graduate study is available upon request. Prospective doctoral candidates should carefully examine this statement.

Graduate Admission
Excepting the M.A. program with concentration in Criminal Justice and Corrections, admission to graduate study in sociology normally requires a minimum undergraduate grade-point average of 3.0 and a combined score (quantitative and verbal sections of the Graduate Record Examination) of 1000 on the Graduate Record Examination. Inquiries concerning admission should be directed to Chairman, Admissions Committee, Department of Sociology. Admission to the M.A. program with concentration in Criminal Justice and Corrections requires a B.S. or a B.A. degree, a grade-point average of 2.75 and a combined total of at least 1000 on the quantitative and verbal components of the Graduate Record Examination. Enrollment in this program is currently limited to five admissions per year.

Special Facilities
The Department maintains IBM unit record equipment, 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 (CIRB), a data archives unit and the Iowa Urban Community Research Center (IUCRC). CIRB was established in 1968 as a laboratory for research in social psychology. The basic facility is a small group laboratory complex with audio and video tape and interactive process simulation equipment. The data archives unit houses the results of numerous surveys which are available to highly and students for teaching and research purposes.

IUCRC was established in 1958 and maintains a research library, a data bank and laboratory. (See the Research Activities section of the Catalog.)

Faculty Roster

Professors Alpern, Mullord, Price, Shannon, Wilmes; associate professors Alexander, Caneda, Douglas, Kohnert, Paton, Pope, Stratton; assistant professors Fox, Kim, Kiss, Lawler, Mueller, Payne, Shapiro, Weinberg, Whitehurst, Wyrick; instructor Helman; affiliated staff Jacob.

Courses
Sociology

For Undergraduates Only

Note: All sociology majors are required to take 34-1, 34-2, 34-10, and 34-11.

34-1 Introduction to Sociology: Principles

4 s.h. Scientific approach to the analysis and explication of culture and social organization; may be followed by 34-5. May be taken in partial fulfillment of the social science core requirement.
Sociology

34:137 Field Methods in Social Psychology 4 h.
Field experiments, experimental controls and various naturalistic observation techniques. Open to advanced undergraduate and graduate students by permission of instructor. Prerequisite: PSYCH 1130.

34:139 Group Organization and Leader-Member Relations 3 h.
Primary groups in modern society; interpersonal relations in small groups; processes of group formation and change; social functions of leadership. Prerequisite: PSYCH 31 and 140.

34:230 Contemporary Approaches to Social Psychology 3 h.
Review and critical analysis of the current empirical approaches and techniques of social psychology. Prerequisite: PSYCH 31 and 140 and departmental standing as major in social studies in social psychology; other majors by consent of instructor.

34:241 Seminar: Selected Topics in Social Psychology 3 h.
Selected theoretical and methodological issues. Prerequisite: advanced graduate standing and consent of instructor. May be repeated.

42:224 Seminar in Social-Group Analysis 3 h.
Selected problems; Prerequisite: advanced graduate standing and consent of instructor. May be repeated.

42:225 Seminar in Collective Behavior 3 h.
Selected problems. Prerequisite: advanced graduate standing and consent of instructor. May be repeated.

42:227 Seminar: Processes of Deviation 3 h.
Critical analysis of dynamic models of deviance with particular emphasis upon significant theoretical and methodological issues. Prerequisite: graduate standing and consent of instructor. May be repeated.

42:248 Research Practicum in Social Psychology 3-4 h.
Graduate group research on selected topics in social psychology. Prerequisite: consent of instructor. May be repeated.

43:140 Criminology 3 h.
Theories and causes of crime; the criminal justice process; correctional treatment; and crime prevention. Prerequisite: PSYCH 31.

43:141 juvenile Delinquency 3 h.
Demographic and social factors; theories of deviance causation; and legal control. Prerequisite: PSYCH 31 and consent of instructor.

43:145 Sociology of Consumption 3 h.
Analysis of consumer behavior; the work and function of the American consumption process. Prerequisite: PSYCH 4140 or consent of instructor.

43:146 Deviance, Social Control, and Social Policy 3 h.
Basic theories of deviance and analysis of social control strategies; mechanisms which work on the relationship between social control efforts and social deviance. Prerequisite: PSYCH 4140 or consent of instructor.

43:147 intervention Strategies and Problems 3 h.
Analysis of intervention strategies in the areas of crime and delinquency emphasizing implications in theory, method and evaluation of intervention techniques. Prerequisite: PSYCH 4140 or consent of instructor.

43:148 Internship in Criminal Justice and Corrections 1-4 h.
Supervised field work in a criminal justice or correctional agency with formal instruction in related issues in the field. Prerequisite: PSYCH 4140 or consent of instructor. May be repeated.

43:149 Professional Seminar in Criminal Justice and Corrections 1-3 h.
Integration of coursework and experience through group discussion and individual research. Prerequisite: enrollment in law enforcement and corrections M.A. program.

43:192 Sociology of Law 3 h.
Nature and internal structure of legal phenomena and their consequences with variations in social organization and cultural systems. Prerequisite: PSYCH 31.

43:292 Sociology of Law 3 h.
Theories of crime causation and their relationship in the volume in which they have functioned. Prerequisite: graduate standing and consent of instructor.

43:293 Seminar: Sociology of Law 3 h.
Law as a social institution; its origins, development and role in culture, social process, social groups and other aspects of social control. Prerequisite: graduate standing and consent of instructor.

43:294 Seminar: Selected Topics in Deviance and Control 3 h.
Critical analysis of current research with particular emphasis upon theoretical considerations and methodological foundations. Prerequisite: graduate standing and consent of instructor.

Family, Socialization and Society

34:150 Introduction to Women's Studies: The Sociology of Women 3 h.
Designed as a basic social science approach to sex roles and sex role stereotyping, including analysis of both male and female sex roles. Prerequisite: PSYCH 31 or consent of instructor.

34:153 Aging and Society 3 h.
Social role structure; strain theory and group roles; concerns of aging; contactlessness and interdependence during the life cycle; intergenerational relations; social policy regarding aging and the aged. Prerequisite: PSYCH 31 or consent of instructor.

34:156 Culture and Personality 3 h.
Relationship of anthropological and psychological variables in understanding behavior. Cross-cultural differences and regularities in personality and socialization. Prerequisite: PSYCH 31, 112 or 112.5 h. Same as Anthropology 116.5 h.

34:158 Sociology of Alternative Life-Styles 3 h.
Living arrangements that solve for, or supplement, those in the traditional family, critique of traditional family structure; common, living together, bachelor, co-housing (both male and female), solitary, single-family households, homosexual marriage, marital infidelity, co-marital relationships ("swinging") and life-styles influenced by religious and postmodern ideological change to same-sex couple communities. Prerequisite: PSYCH 31 or consent of instructor.

43:194 The Family in Various Societies 3 h.
Family systems in comparative and historical perspective. Comparison of the American family with different cultures and societies, such as Nayar, Trobriand, Inuit Eskimos, Russia, Japan, Aramaic, Chinese. Prerequisite: PSYCH 31.

43:195 Sociology of the American Family 3 h.
The family as an institution in American society; interrelationships with other institutions; processes of organization and differentiation, family structure over stages of the life cycle; variations by social class and ethnic group; the family and social change. Prerequisite: PSYCH 31 or consent of instructor.

34:163 Sociology of Aging, Courtship and Mate Selection 3 h.
The functional system of dating, marriage and mass selection; acquaintance and non-marital behaviors underlying heterosexual sociability and dating; motivations and influence of the love emotion; potential variability, dominant factors influencing selection of mate. Prerequisite: PSYCH 31 or consent of instructor.

34:165 Prescriptive Social Control and Socialization 3 h.
Examines general mechanisms and processes of socialization, including socialization of children and adult behavior; attention given theoretical explorations of socialization processes; emphasis on performance of socialization for basic sociological issues of social control, social change, and conformity of organizations and institutions. Prerequisite: PSYCH 31 or consent of instructor.

34:173 Social Development of Children 3 h.
Learning and development of pre-personal behaviors from infancy through early childhood. Prerequisite: PSYCH 4150.

34:252 Sociology of the Family 3 h.
Nature and evolution of a variety of family research traditions insisting three with a cross-cultural and social change emphasis; identification of theoretical problems and specific sources of the importance of family in social development; comparison of family socialization concepts and perspectives; an examination of a set of social roles, a small group, etc. Prerequisite: general course.

43:276 Socialization and Self-Concept 3 h.
Analysis of women's roles with specific reference to the influence of socialization processes on sex roles and sex role socialization. Emphasis on the role of sex socialization and its influence on self-concept, including implications for mental health. Prerequisite: graduate standing or consent of instructor.

34:253 Seminar: Theory and Research in the Family 3 h.
Dissertation seminar. Participation and leadership of seminar in major research project with emphasis on the development of new research methodology and improved understanding of family socialization. Prerequisite: consent of instructor.

43:254 Societal Roles: Societal Roles in Family Sociology 3 h.
Selected theoretical and methodological issues. Prerequisite: advanced graduate standing and consent of instructor.

34:292 Social Behavior of Children 3 h.
Practitioners on learning and development of interpersonal behavior from infancy through childhood. Prerequisite: graduate standing.

43:295 Seminar: Selected Problems in Social Development 3 h.
Selected advanced topics dealing with the social behavior of children and youth. Prerequisite: consent of instructor.
Spanish and Portuguese

Department Chairman: Oscar Fernández
Degree offered: B.A., B.A.A., Ph.D.

The Department provides coursework for undergraduate and graduate majors in Spanish or Portuguese, for the satisfaction of foreign language requirements in baccalaureate and advanced degrees in other fields, and for the satisfaction of the second literature requirement for undergraduate majors in English and in letters.

The Department works closely with other foreign language departments of the University and with the School of Letters and departments of Political Science, History, Linguistics and English.

Knowledge of foreign language and culture is indispensable in many careers. Students majoring in Spanish or Portuguese find opportunities in such fields as transportation, industry, journalism, international broadcasting and publishing, as well as teaching, research, library work and translating.

Undergraduate Programs in Spanish

First- and second semester Spanish courses interlace the four performance objectives—understanding, speaking, reading and writing—through a four-credit format and a policy of frequent testing of these skills. Students thereby acquire a broadly-based evaluation of their strengths and weaknesses and can 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 aural-or-oral emphasis or an emphasis on reading, writing and content analysis.

Upper-level courses are scheduled in such a way as to enable students to remain in complete contact with the language for at least four contact hours per week and a 3.2 average in Spanish.

The undergraduate major in Spanish requires the following courses, or their equivalents, beyond the second-year level:

Language
35:27, 28 Third-Year Composition and Conversation
35:103
Fourth-Year Composition and Conversation

Literature
One course from the Peninsular area:
35:101 Renaissance and Golden Age Literature
35:102 Modern Spanish Literature
and one course from the Spanish-American area:
35:103 Contemporary Spanish-American Fiction
35:104 Conquency Spanish American Poetry and Drama

Electives
Six hours in Spanish courses numbered 100 or above. Only one course given in English may be taken as an elective.

Spanish Teaching Minor
The Spanish teaching minor requires 35:27, 28 Third-Year Composition and Conversation and 35:157 Spanish Phonology. Students preparing for certification to teach at the secondary level are encouraged to choose additional courses in Hispanic literature and civilization.

Honor in Spanish
Admission to the Honors Program in Spanish requires a minimum 3.0 overall grade-point average and a 3.2 average in Spanish. Graduation with Honors in Spanish requires six semester hours earned in 35:121, 122 Honors Literature and/or 35:123, 124 Honors Spanish Literature, an Honors essay in Spanish, and an oral discourse in Spanish.

Undergraduate Program in Portuguese

The first-year Portuguese program employs a shared-teaching technique in which sections usually are taught three days a week by one teacher and two by another. This gives students exposure to different teaching techniques, voices and accents in a correlated program which provides a wide 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 Undergraduate Nonmajors

Undergraduate students in other disciplines may meet part of the College of Liberal Arts literature core requirement with 35:5 Contemporary Latin American Narrative readings in English. The Department offers several other literature and cultural survey courses which are taught in English and are of general interest.

English-language courses in Hispanic Literature are countable with those for the major in letters, and the interdepartmental development of this kind is anticipated.
Graduate Programs

Master of Arts

Candidates for the M.A. degree must complete 36 semester hours of coursework without thesis, including 35-208, 209 Graduate Syntax, Lexicology and Composition, 35-210 Studies in Style, 35-301 Historical Spanish Grammar I, 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

The degree requires a minimum of three years of graduate study, at least one of them at lowe; the passing of a comprehensive examination; and the preparation and oral defense of a dissertation. Candidates must demonstrate early an ability to conduct independent research, by successfully completing two research projects.

Two doctoral programs are available.

One is dedicated to Hispanic literatures. 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 second doctoral program provides for specialization in Spanish language and literature with emphasis on language. Before his or her comprehensive examination, the candidate must complete a course in general linguistics and the equivalent of three semesters of college Latin, and must demonstrate a graduate-level knowledge of a second approved foreign language and a reading knowledge of a third approved foreign language.

In both programs, coursework and individual reading must give the candidate a thorough knowledge of the Spanish language, its literature and related civilizations, from medieval to modern times; provide adequate experience in second Romance language; and develop the candidate's capacity for critical analysis of literary texts.

All candidates must demonstrate their general knowledge and ability through a qualifying examination and two research papers approved by the departmental committee.

Special Facilities

The Language Laboratory provides facilities for language learning, teaching and research. These include standard and shorthand tape recorders, reel-to-reel players, soundproof recording rooms, two drill rooms with 64 dual-channel tape recorders providing a simultaneous master duplicated student record, an electronic classroom, a soundproof work room, a film and a 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. A 30-minute Spanish language variety program, "Suercen en Espanol" ("Happenings in Spanish"), sponsored by the Department, is broadcast weekly over University radio station WSUI.

The Spanish-Portuguese Players, a group of volunteer student actors, provide dramatic programs in the Spanish language for students and others in the local area, and on request perform at other campuses in the state.

The Faculty

Several Department members hold or have held committee chairmanships in the Modern Language Association and the American Association of Teachers of Spanish and Portuguese. Several are listed in international directories of scholars. Some also serve on the consulting and editorial boards of literary journals and other publications.

Faculty Roster

Professors Duran-Cendrada, Fernandez, Martinez-Bonast; professors emeriti Davis, King; associate professors Daniel, De Mello, Dichter, Dough, Fernandez-Barrere, Swerz; assistant professors Frank, Sanzio, Skinner, Teachner; instructor Przebozski.

Spanish Courses

Primarily for Undergraduates

An undergraduate who has had less than two years of high school study in Spanish will be placed in a 110, 115, or an equivalent class. If the student has had two years of high school Spanish, he or she will be placed in a 110, 115 or 120 class. Students not placed in an appropriate class will be assigned to a class upon consultation with the departmental advisor. Students wishing a more advanced placement may take the placement test. Transfer students who have taken college Spanish or other institutionals will be placed according to courses previously completed.

A student may not, except with the approval of the chairperson, take for credit an elementary course if he or she has already completed a higher level course for which the elementary course or its equivalent is a prerequisite.

35-1 Elementary Spanish 4 a.h.
35-2 Elementary Spanish 4 a.h.
35-8 Contemporary Latin American Narrative 4 a.h.
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35-8 Contemporary Latin American Narrative 4 a.h.
35-8 Contemporary Latin American Narrative 4 a.h.
35-8 Spanish for Health Professionals 4 a.h.
35-11 Intermediate Spanish 3 a.h.
35-12 Intermediate Spanish 3 a.h.
35-15 Intermediate Spanish 3 a.h.
35-18 Spanish Conversation—Bophone Level 1-2 a.h.
35-22 Spanish Pronunciation 1-2 a.h.
35-31 Spanish Pronunciation 1-2 a.h.
35-38 Spanish Pronunciation 1-2 a.h.
35-38 Spanish Pronunciation 1-2 a.h.
35-40 Spanish Composition and Conversation 4 a.h.
35-50 Spanish Composition and Conversation 4 a.h.
35-50 Spanish Composition and Conversation 4 a.h.
35-50 Spanish Conversation—Beginner Level 1-2 a.h.
35-51 Reading Spanish 6 a.h.
35-55 Spanish Composition and Conversation 4 a.h.
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Speech and Dramatic Art

Department Chairman: Samuel L. Becker
Degree offered: B.A., M.A., 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 their society to themselves; with communication as an essential process in the operation of any society, especially the highly technological society; with artistic communication as well as functional communication. Those concerns with communication are manifested in two ways: faculty attempts and the attempts of the Department's students to better understand communication processes, and joint attempts to help improve abilities to communicate effectively, whether as actors or directors, reporters, spokes leaders, supervisors, participants in a group, film-makers, broadcasters, designers, playwrights, teachers, spouses or parents.

The Department has six major divisions, whose emphases and distinctive courses are described below individually under the headings "linear/developmental Courses," "Speech Education," "Dramatic Art," "Rhetoric and Public Address," "Communication Research," and "Broadcasting and Film."

General Departmental Requirements

Bachelor of Arts

Regardless of his or her area of specialization, a student seeking a Bachelor of Arts degree in the Department must earn:

- A minimum of 24 semester hours in the Department, 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/performance courses in the Department.

The student may specialize in rhetoric and public address, dramatic art, broadcasting and film, or speech education. The additional requirements for these majors are closed in the division sections.

Requirements for the Master of Arts

A minimum of 30 semester hours including Introduction to Research or its equivalent. A research thesis, or, for the non-thesis 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.

Requirements for the Master of Fine Arts in Dramatic Art

A minimum of 48 semester hours and six semesters in residence. Demonstration of outstanding artistic talent and achievement in theatre.

Requirements for the Educational Specialist (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.

Requirements for the Doctor of Philosophy

A minimum of 72 hours of graduate credit, exclusive of research tools and dissertation. At least one course, or equivalent, in introduction to research, dramatic theory, rhetorical theory and others as determined by the student in consultation with his or her advisor and graduate committee. Successful completion of a qualifying examination and demonstrated competence in one's research area. Substantial scholarly dissertation.

Faculty Roster

Professors Becker, Bowers, Cordier, Ehringer, Goff, Hitchcock, MacCam, Schaal, Thayer; professors eteriti Baird, Bryant, Gillette, Harsburger, Seabury; associate professors Brownstein, Catulano, Grotbeck, Ochs, Winnie; assistant pro-
fessors Andrew, Bradac, Hall, Kemp, Miller, Pepper, Trank; instructors Blisse, Vining; lecturer Wokewaskus.

Interdivisional Courses

36:62 The Bases of Speech; Voice and Pronunciation 3 s.h.
Phonetics, voice quality, deviation, loudness and ear; application to film, broad-casting, public address and dramatic situations.

36:67 Oral Interpretation of Literature I 3 s.h.
Introduction to principles and practice of reading literary prose and poetry in audi- ence; analysis, interpretation, evaluation; requirement for students in elementar-y education and English.

36:69 Honors in Speech and Dramatic Art 5 s.h.
Introduction to principles and practice of reading literary prose and poetry in audi- ence; analysis, interpretation, evaluation; requirement for students in elementar-y education and English.

36:145 Problems in Speech and Dramatic Art 3 s.h.
Open to seniors and graduate students by permission.

36:167 Oral Interpretation of Literature II 3 s.h.
Critical analysis and oral presentation of more complex works of fiction, novella-tion, poetry and drama; periods and genres of literature studied vary by semester.

36:200 Introduction to Research 2-5 s.h.
Required of all new graduate students in speech and dramatic art except those on-
cerd in degree in Masses of Fine Arts, problems of advising and developing con-tents of thesis; study and application of representative methods in the field of speech; lectures, discussions, readings, papers and reports; guidelines in re-sponsibility.

36:285 Master's Thesis 5 s.h.

36:485 Ph.D. Dissertations 5 s.h.

Speech Education

Professor in Charge: Douglas Trank
Degree offered: B.A.

Students may proceed to the B.A. with emphasis in speech education by declaring a minimum of 30 semester hours in the De-partment of Speech and Dramatic Art and a minimum of 20 semester hours in the College of Education, plus two semes-ter hours in American history or American government. All speech education majors must complete 36:53 The Bases of Speech; Voice and Pronunciation.

Students may select one of these suggested plans of study:

Plan A: Speech and Dramatic Art Emphasis

36R:30 Communicating in Public 3 s.h.
36R:31 Group Communications 3 s.h.
36R:32 Interpersonal Communication 3 s.h.
36R:37 Oral Interpretation of Literature I 3 s.h.
36R:60 Communications Theory in Everyday Life 2-3 s.h.
36R:70 Resistance to Persuasion 3 s.h.
36R:75 Parliamentary Procedure 2 s.h.
36R:80 Communication and Contemporary Culture 3 s.h.
36R:90 Rhetoric and Politics 3 s.h.
36Y:40 Introduction to Broadcasting 3 s.h.
or 36Y:31 Survey of Film 3 s.h.
36Y:101 Acting I 3 s.h.
36Y:107 Directing Speech Activities 3 s.h.
36Y:124 Theory and Practice of Argument 3 s.h.
36Y:140 Directing I 3 s.h.

Plan B: Speech Emphasis

36A:30 Communicating in Public 3 s.h.
35R:31 Group Communication 3 s.h.
35R:32 Interpersonal Communication 3 s.h.
36R:37 Oral Interpretation of Literature I 3 s.h.
36R:60 Communications Theory in Everyday Life 3 s.h.
36R:70 Resistance to Persuasion 3 s.h.
36R:85 Speeches of the Western World 3 s.h.
36R:80 Communication and Contemporary Culture 3 s.h.
36R:90 Rhetoric and Politics 3 s.h.
36Y:50 Introduction to Broadcasting 3 s.h.
or 36Y:31 Survey of Film 3 s.h.
36Y:107 Directing Speech Activities 3 s.h.
36Y:124 Theory and Practice of Argument 3 s.h.
36Y:15 Introduction to Speech and Hearing Processes and Disorders 3 s.h.

Plan C: Theatre Emphasis

36R:30 Communicating in Public 3 s.h.
36R:32 Interpersonal Communication 3 s.h.
36R:37 Oral Interpretation of Literature I 3 s.h.
36T:110 Introduction to Technical Design 6 s.h.
36T:101 Acting I 3 s.h.
36T:140 Directing I 3 s.h.
36T:149 Children's Theatre and Creative Drama 3 s.h.
36Y:50 Introduction to Broadcasting 3 s.h.
36Y:107 Directing Speech Activities 3 s.h.
or 36Y:110 Speech for Educators 3 s.h.
36Y:15 Introduction to Speech and Hearing Processes and Disorders 3 s.h.

Students are advised to complete a minimum of 20 semester hours at a minor in English (with some work in dramatic litera-ture), social studies or other terminal fields to strengthen their major, and to participate in University forensics, broadcasting and film, and theatre activities. It is also wise to fulfill the his-torical-cultural core requirement for the College of Liberal Arts with 11:51, SI Drama in Western Culture, to provide a general background in dramatic literature, analysis, and theatre history.

Sequential Requirements in Education

Statutory: American history or American government 2 s.h.

Junior Year

75:00 Introduction to Secondary School Teaching 2 s.h.
79:51 Pre-Education Practicum 2 s.h.
79:75 Educational Psychology and Measurement 3 s.h.
Speech and Dramatic Art

Speech Year
75-160 Methods: Speech 3 s.h.
75: Methods in minor or three-semester-hour course in education in lieu of second methods course 3 s.h.
75-191,192 Observation and Laboratory Practice in Secondary School 12 s.h.

For detailed information about teacher certification, see "College of Education."

Courses

36:137 Directing Speech Activities 3 a.h.
Planning, organizing and evaluating contest and cocurricular forensics programs in school; designed for independent study; class meeting on free basis; class arranged.
36:140 Methods: High School Speech 3 a.h.
Teaching speech, debate and forensics; consideration of various patterns in teaching, competitive programs, objectives, instructional methods and materials, aches of oral and written criticism and evaluation, testing and grading, noise and references, personnel and sources of publications, principles and values of mimesis and paraleutic activities, audio-visual aids, facilities and equipment, and other means of augmenting teaching of speech in schools. Same as Speech 15:330. Required for majors who plan to apply for professional certificates in speech.
36:178 Workshop in Teaching Dramatics, Forensics and Speech Art 2 a.h.
Methods, materials, audio-visual aids, progressions and evaluations in teaching and supervising students in courses and selectives activities; opportunities for observation, demonstration and practice in teaching voice and speech development, drama art, dramatic criticism and debate, radio and television, and television and dramatic forms and events. Same as Speech 15:730-2.
36:205 Colloquium Teaching Freshman Rhetoric 1 a.
Lecture-discussion course exploring literature and principles involved in teaching composition, public speaking and debate. Same as English 99:940.
36:201 Foundations of Speech Education 2-4 a.h.
Origins, early programs, psychological bases, and theories and practices of teaching speech; relevant counsel, teaching and writing by early contributors to speech education from Public School Journal to Speech Education in works of Aristotle, Quinean, Aesop myers, Augustus, James, James teachers and English teachers and speech ed.
36:202 Modern Speech Education 2-4 a.h.
Modern speech education. Discussion of the works of Ramey and English theorists and, and working with contemporary developments in teaching, research and in speech education in America. Instructional methods and materials as revealed by offering literature and problems related to planning, organizing and evaluating speech program in secondary schools.

Communication Research

Professor in Charge: John W. Bowers
Degrees offered: M.A., Ph.D.

This program leads either to the M.A. or the Ph.D. degree. Programs designed for individual students provide the background for and experience in experimental research on interpersonal communication, group communication and the mass media. Candidates are expected to take work in related social sciences in addition to the general requirements of the Department of Speech and Dramatic Art and appropriate courses selected from those listed below. In general, Ph.D. candidates in this program must complete the statistics sequence in the Department of Psychology or in the College of Education and take philosophical problems of the social sciences in the Department of Philosophy. Work in advanced statistics and computer science may be used to fulfill the research tools requirements of the Department. Opportunities for varied research in addition to that required for thesis or dissertation projects are available in the Department's Communication Research Laboratory. Several original studies in preparation for dissertation and later research are required of doctoral candidates.

Courses

36:408 Communication Theory in Everyday Life 3 a.h.
For undergraduates only; examination of several theoretical problems in communication theory and application of these theories to the problems of day-to-day problems.
36:479 Resistance to Persuasion 3 a.h.
For undergraduates only; examination of persuasion as a motivational communication in interpersonal, small-group, media and cultural contexts and application of methods to resistance.
36:476 Sexual Politics and Sex-Gent Group Processes 2-3 a.h.
Research, theory and personal experience concerning communication in small groups with emphasis on power communication in terms of sex and power.
36:476 Introduction to Language and Communication 3 a.h.
Basic theory of language in terms of intergroup communication. Material for research projects in introductory course. Same as Linguistics 10:476.
36:139 Communication and Conflict 3 a.h.
Consideration of mutual implications of communication theory and conflict theory, normal experiments required.
36:432 Group Communication Theory and Research 2 a.h.
Survey of small group research and theory.
36:233 Research Methods in Communication 2 a.h.
Principles and methods of designing and executing experimental research in speech and dramatic art.
36:334 Communication Research 3 a.h.
Review and analysis of quantitative research on interpersonal communication.
36:236 Presentation in Linguistics 3 a.h.
Same as Linguistics 10:236.
36:238 Acquaintance of Communication Behavior 3 a.h.
Research and theory on acquisition of social communication behaviors, including language behavior; original research may be required.
36:380 Research Practicum 1-3 a.
Opportunity for completion of individual research projects began in other courses.
36:232 Seminar: Elements of Language-Variegation 2-3 a.h.
Research problems on progressive aspect of language, varying from semester to semester.
Focus on recent past, elements in small group research, patterns are changing from term to term, designed research required.
36:332 Seminar: Communication Research 3 a.h.
Focus of winter changes from term to term; among other topics to which seminar devoted are: speech community; original raws required. Same as Linguistics 10:332.
36:532 Seminar: Rhetorical and Communication Theory 3-5 a.h.
Expedition in and special work in developing theoretical and communication reci-

Rhetoric and Public Address

Professor in Charge: Douglas Estinger
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 of speaking. 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 that emphasize 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 interrela-
tions of public address and theatre, film, radio, television and
other arts of communication. The student concentrating in pub-
lic address also is expected to complete a substantial number of
courses in other departments in the College of Liberal Arts.

Program: for majors include:

36:43 Principles of Speech Communication

One of the following:

36:40 Communication in Public
36:41 Group Communication
36:42 Intercultural Communication
36:45 Parliamentary Procedure
36:42 or 36:45 Oral Interpretation of Literature I, II

One of the following:

36:124 Theory and Practice of Argument
36:125 Theory and Practice of Persuasion
36:126 Interview and Conference Methods

One of the following:

36:40 Communication Theory in Everyday Life
36:70 Resilience to Persuasion
36:80 Communication and Contemporary Culture
36:85 Speeches of the Western World
36:97 Rhetoric of Agitation and Control
34:135 Contemporary Public Address

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.

Forester

Through forensics, the public address student at Iowa has the
opportunity to expand his or her research skills, develop im-
poved listening habits, work on organizational and simplifica-
tion methods and test all public speaking skills in audiences
outside the classroom. Students may choose to work in debate,
oration, interpretative reading or spontaneous speaking.

Each student will have the opportunity to work with experienced
instructors here at the University and to receive detailed cri-
siques from teachers of argumentation and public address
throughout the country.

The Master of Arts Program

The program is intended to build a strong foundation for teach-
ing 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.

The program will include:

- Introduction to Research (36:300)
- At least 15 hours of courses in rhetoric and public address in-
cluding a setting
- At least six hours of courses in other divisions of this or re-
lated departments.

A course in the basics of speech (voice and phonetics) or evi-
dence 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 the major field of the field of learning and to develop the
research competencies essential to a life of productive scholar-
ship.

For basic requirements, see "Graduate College."
SR:120 Theoretical Criticism
3 a.h.
Concepts and principles of theoretical theory applied in analytical-critical examination of aesthetic experience and aesthetic relations in literature, music, drama and film. Open to graduate and advanced undergraduate students.

SR:121 Great and Recent Public Address
3 a.h.
Analysis and sharpening of major speaker traits and their execution from 5th century B.C. to 20th century A.D. Study of influential voices: philosophical and educational topics of Socrates, Athens, the Odyssey, the Iliad, to 19th cent.; management, philosophy, and public discussion of the 20th century. Selected Arts readings, concept and early Arts lectures.

SR:123 American Public Address: Early Period
2 a.h.
Historical and critical study of American public speaking in Congress and other legislative bodies, prewar, low common and public platforms—from Colonial period to Civil War.

SR:124 American Public Address: Later Period
2 a.h.
Continuation of 1939, from Civil War to end of World War II.

SR:125 British Public Address
3 a.h.
Historical and critical study of representative speakers in British time—from Parlia-
ment, law, and church, and on the public platform—from times of Elizabeth I to the present.

SR:126 Contemporary Public Address
3 a.h.
Critical examination of public address since World War II; speaking in legislative situations, courts, church and public platforms; some American speakers; con-
temporary theory to major theories of other cultures.

SR:201 Classical Antiquity
2 a.h.
Theory and practice of oratory in the classical world. Same as English 236.

SR:236 Renaissance and Modern Rhetoric
2 a.h.
Theory and philosophy of discourse, 1400-1900. Same as English 236.

SR:238 Contemporary Rhetoric
3 a.h.
Theory and philosophy of discourse, 1900 to the present. Same as English 238.

SR:304 The Rhetoric of Social Movements
2 a.h.
Sociological, psychological, political and theoretical approaches to discourse gener-
ated in social movements.

SR:306 The Rhetoric of Revolution and Reform
2 a.h.
One study of the rhetoric generated by revolutionary and reform movements in the 17th and 19th centuries.

SR:401 Seminar: Rhetoric and Public Discourse
2 a.h.
General investigations of selected orators and practitioners; subject varies by se-
mer.

SR:402 Seminar: Aristotle
2 a.h.
Students will learn to analyze Aristotle's Rhetoric and related readings; survey of intel-
lectual achievement.

SR:403 Seminar: Argument
2 a.h.
Studies in the philosophy of argument, with special attention to the work of recent
writers in ethics, logic, epistemology and philosophy.

SR:404 Seminar: Speech Acts
2 a.h.
Study of the topic of speech acts, with special attention to the work of Austin and Searle.

Broadcasting and Film

Professors in Charge: J. Dudley Andrews, Hugh V. Cornier
Degress offered: B.A., M.A., Ph.D.

Bachelor of Arts

This program is intended for the student who seeks an understand-
ing of the broadest and film media and their relationship to the larger field of the communication arts. The program is of-
f ered within the context of a liberal education and is not regard-
el solely as preparation for a professional career. Students may emphasize either broadcasting or film in their selection of elec-
tive courses, but minimum requirements lead all students to ex-
posure in historical and evaluative courses in both broadcasting
and film, and to experience in the production of materials for
broadcast and film media.

The broadcasting and film major requires a minimum of 27
hours in the Department of Speech and Dramatic Art, including
360:00 Introduction to Broadcasting, 360:01 Survey of Film, at
least six additional hours of advanced production courses in
broadcasting and four division and at least six ad-
ditional hours of advanced historical/critical/behavioral courses in
the division.

Graduate Program

The Master of Arts 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 doctoral
program in broadcasting and film is the development of re-
search competence. For basic requirements, see the "Graduate
Catalog" for the Catalog of the

Facilities

Production courses in broadcasting are held in the University
Television Center and in the studios of University radio station
WGUI. The large television studio in the Center is equipped
with three microphones and standard broadcast cameras, all of
the associated audio and lighting equipment, telescopel screen
and both 1/2-inch videotape and two 1-inch videotape recorders.
There is also an audio preparation room with tape recorders and
earphone monitors. In addition, most of the nearby classrooms
are wired for television and that tapes can be shown in history
and criticism classes and an area is set aside where students
may study videotapes on their own.

Although students in film production courses sometimes use
the television studio as a sound stage, it is assumed that most
filming will be done on location. Six Boxes 16-millimeter Super-8
cameras are used in the introductory course, seven Bell and
Howell and one Bolex 16-millimeter for the next course and
two Bolex 16-millimeter for the advanced courses. For sound re-
cording, two Sony and two Nagra tape recorders (all beryllium op-
crated) are used. For lighting there are eight Lowel quartz lights.
Each course has its own editing area; there are eight film
section and fifteen film section (ten of them equipped for
sound editing). There are two Movietone editing machines, one
sync-sound sound insert viewing area and a modest ani-
mation stand.

The University maintains a complete motion picture laboratory
and all processing and printing is done on campus. There is a
new sound mixing facility that has a three-channel sync-sound
program-insert capability. There is a Movietone libraryequip
for students who may wish to study a particular film in detail.

Courses

360:00 Introduction to Broadcasting
3 a.h.
Overview of broadcast media as communication service; lectures and class discus-
sions explore historical development of radio and television; emphasis on program-
ning and production; students receive laboratory experience in radio and
television production.

360:01 Survey of Film
2 a.h.
Introduction to motion picture history, theory and criticism, including study of re-
lationship of film in other arts; laboratory sections provide training and experience
in filmmaking.
Dramatic Art

Director of Theatre: Lewis Sulli
Degree offered: B.A., M.A., S.F.A., Ph.D.

Bachelor of Arts

The requirements are:

1. NIU, 2 Drama in Western Culture (to satisfy the historical-cultural core requirement);
2. A minimum of 30 semester hours of credit within the Department, or a combination of courses from this Department and equivalent courses from other colleges or universities;
3. A minimum of 12 semester hours of credit for production/perform ance courses in the Department (or equivalent depart ment); and
4. A minimum of 12 semester hours of credit for production/perform ance courses in the Department (or equivalent depart ment).

Students with sufficient talent and dedication may specialize in one or more production areas. Admission to second and third years of the production sequence is limited to students of superior ability. Work in all production and costume areas is desirable for personal and professional advancement. Studies in history, literature, philosophy, social studies, art, music, dance and religion are encouraged. There is particular stress on choos ing courses which will fulfill graduate department entrance re quirements for those expecting to take advanced degrees. Students expecting to apply for a teaching certificate should choose courses to satisfy departmental and state requirements.

Master of Arts

The program is designed for students who anticipate teaching at the high school and junior college levels and for those who want to earn a degree before proceeding to the doctorate. The program is 36 to 42 semester hours is proposed by the student and his or her advisor to be approved by a committee of the graduate faculty. It will consist of a combination of prescribed and elective courses covering the general areas of dramatic literature, criticism, theory, history, and production. A thesis or graduate seminar in history, theory or criticism of drama or theatre is required.

Master of Fine Arts

Students who demonstrate exceptional ability in playwriting, directing, design, acting, arts management or technical direction may apply for admission to the program of study and production leading to the M.F.A. Admission is dependent on recommendations and appropriate demonstrations of ability. Six semesters in residence and 48 semester hours are required, and students must supply for admission each year. Substantial creative work of high quality is expected of all candidates.

Educational Specialist

The Ed.S. program is intended for students who plan to teach in the high school or community college. Courses and practical experience are required in the areas of educational philosophy and pedagogy as well as in drama and theatre. At the successful conclusion of the two-year program, the student is awarded the M.A. and the Ed.S. degrees.

Doctor of Philosophy

The Ph.D. program in theatre is designed to emphasize research and creative scholarship rather than general education. A student entering with a B.A. must take a qualifying examination after completing 30 s.h. of theatre studio, one semester with an M.A. must take the examination near the end of the second semes ter in residence. After qualification the candidate must submit a proposal for a year of specialization; on this basis an appropriate interdisciplinary committee is formed which recommends a plan of study to support the candidate's specialty and dissertation research. When these studies are completed the committee examines the candidate for his preparation to engage in the particular research proposed, and provides guidance during the writing of the dissertation.

Facilities

The division's commitment to an extensive and varied produc tion program is reflected in the use of four quite different theat res. The Old Costume Shop is large, flexible space in which class projects, highly experimental productions and Reader's Theatre productions are performed. With scenery before small audiences. The Studio Theatre, with permanent systems for light and sound control, offers directors and designers an op portunity to arrange its 200 seats and define the playing area, thus permitting experimentation with several possible relationships between the actors and audience. The E. C. Main Theatre is a newly re-conditioned, excellently equipped proscenium theatre which offers seating for almost 300 patrons. The division also performs in the recently completed Haascher Auditorium. Seating for 2,680, this facility is used by the numerous professional touring shows which perform in Iowa City, and boasts the latest and most sophisticated stage machinery available.

To support its continuous production schedule and to provide students with an appropriate range of experience, the divi sion maintains several shops for the building, maintenance and storage of scenery, costumes and properties. Using the three scene shops, students can learn to work in metal and plastics as well as canvas and wood. In lighting and sound, students are exposed to a range of equipment from the manual to the automatic lighting control and the two-channel sound systems of the Studio Theatre to the fully computerized lighting controls and the five-channel sound system (for special effects and vocal rein forcements) used in Haascher Auditorium.

Courses

For Undergraduates

307 Shakespearian
Same as English 913
3 s.h.

307-13 Shakespearean
Same as English 913
3 s.h.

327-1 Drama in Western Culture
Same as English 913
3 s.h.

327-2 Drama in Western Culture
Same as English 913
3 s.h.

327-31 Drama in Western Culture
Same as English 913
3 s.h.

327-32 Drama in Western Culture
Same as English 913
3 s.h.

327-41 Modern Drama
Same as English 913
3 s.h.

327-42 The Dramatic Tradition I
Same as English 913
3 s.h.

327-43 The Dramatic Tradition II
Same as English 913
3 s.h.
Advanced Degrees

All students in advanced degree programs are required to complete part-time/ full-time training assignments as a research, teaching or clinical nature, as follows:

Master of Arts: at least three academic terms (semester or summer session).

Doctor of Philosophy: at least five academic terms (semester or summer session). Training assignments completed to fulfill the Master of Arts requirement will not apply toward the Ph.D. requirement.

The time required for a typical training assignment is 10-15 hours per week. No registration is required for these training assignments, and no academic credit is given. The training assignments are on no way connected with or related to financial assistance.

The maximum academic load for all graduate students is 15 semester hours of registration during regular semesters and 8 during the summer session. During a training assignment, the maximum load is 2 semester hours for a semester and 4 for a summer session.

Master of Arts Degree

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 presupposed that the student has a background of undergraduate courses in speech and hearing science, development of oral communication and psychology of human behavior essentially equivalent to an undergraduate major in this field.

Earning an M.A. degree candidates are required to take preliminary comprehensive examinations covering coursework in speech and hearing that is regarded 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 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, E) and elective enrollment. The student should choose one of these four curricula in relation to career objectives and interests. A total of 38 semester hours is the minimum required to complete the master's degree in this department. Candidates for the profes-
Ratonic M.A. degrees are not required to present a thesis. How-
over, students desiring research seminar and thesis interest are
couraged to do so. All candidates for the professional M.A.
degree without thesis are required to take final written compre-
henstive examinations.

Requirements for the Professional M.A. Degree

A. All Majors

*3.116 Nutrition (Psychology and Language 3 s.h.

*3.150 Clinical Procedures in Speech Pathology

and Audiology 3 s.h.

*3.182 Anomalies Disorders 3 s.h.

*3.185 Hearing Loss and Audiology 4 s.h.

3.214 Children’s Language Disorders 3 s.h.

**3.244 Aural Rehabilitation 5-6 s.h.

7C: 199 Counseling for Related Professions 2-3 s.h.

**Two advanced seminars or thesis 4 s.h.

*Requirement; undergraduate course will be accepted as meeting requirements.

**Aural Rehabilitation must be taken for 4 s.h. by au-
diology majors.

Additional semester hours of practicum registration sufficient to meet Internat, direct clinical experiences requirements for Certificate of Clinical Competence in the American Speech and Hearing Association and to provide hours supervised practice experience.

B. Speech Pathology, General Clinical Emphasis

Courses listed under A and

3.183 Stuttering 2 s.h.

3.212 Voice Disorders 2 s.h.

3.215 Neuropsychology of Speech and Language 2 s.h.

3.237 Ceilidh 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 2 s.h.

3.212 Voice Disorders 2 s.h.

3.215 Neuropsychology of Speech and Language 2 s.h.

3.237 Ceiling Palate 2 s.h.

7C: 104 Remedial Methods in Speech and Hearing 3 s.h.

18:192 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 Instrumenta-

tion 3 s.h.

3.241 Advanced Audiology 4 s.h.

3.242 Conservation of Hearing 3 s.h.

3.343 Hearing aids 5 s.h.

3.251 Psychoacoustics Auditory System 3 s.h.

Practicum, research and elective courses to bring total to at

least 38 semester hours.

E. Audiology Major, School Hearing Clinician

Courses listed under A and

3.241 Advanced Audiology 4 s.h.

3.242 Conservation of Hearing 3 s.h.

3.243 Hearing Aids 3 s.h.

7C: 104 Remedial Methods in Speech and Hearing 3 s.h.

7C: 102 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 add-

dition to those previously listed under C above, will meet the

requirements of Iowa and most other states.

American Government or American History 2-3 s.h.

Exceptional Children 3 s.h.

Remedial Methods in Speech and Hearing 2 s.h.

Laboratory Practice in Elementary School 3-5 s.h.

Education Electives 11 s.h.

General Program

The M.A. program for the student planning to continue to the

Ph.D. degree in individually planned and consultation with the

student’s advisor. It usually includes a substantial portion of the
courses previously listed for the professional M.A. program.

Consist of the courses, however, may be elected, deferred or

repeated 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 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 Ph.D. program is usually planned with specialization in

speech pathology, audiology, speech science or hearing science.

Within each area the candidate and advisor may provide for spe-
cial emphasis through suitable selection of advanced seminars

and research work. Most students will find that their special in-
terests lie in one or more of the four listed areas. The establish-
ment of prescribed programs for these areas is not intended to

cescribe the graduate curriculum of the Ph.D. candida-
te who has specialized on 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

proceeds with an adequate plan of study for their accomplishment.

Courses beyond those included in the departmental listings are
drawn mainly from the areas of physics, engineering, math-
ematics, statistics, physiology, neurology, anatomy and psychol-

The nature of the Ph.D. comprehensive examination is deter-

mined for each student by a five-member comprehensive exami-
nation committee. This committee, in consultation with the

student, designs and carries out a plan for a comprehensive

evaluation of the student’s ability to function adequately in a re-
speech and/or acoustic environment. The evaluation must en-
clude both a written and oral performance. Candidates whose
ter training has not included a master's thesis will not fulfill
the comprehensive examination requirement until they have
completed a suitable research project and presented a paper
summarizing its results. This project is to be of a magnitude ap-
propriate to a master's thesis. It is expected that the compre-
prehensive examination will be completed prior to the end of
the student's first calendar year of full-time, post-master's study.
The Ph.D. candidate must also subsequently complete a disserra-
tion based on original research in the area of specialization.

Recommended Courses

A. All areas of specialization

Course, or their equivalents, required for M.A. degree, and
the following additional courses:

3.120 Fundamentals of Laboratory Instrumentation
3.220 Advanced Laboratory Instrumentation
3.250 General Experimental Physics
3.251 General Experimental Physics Laboratory
3.990 Research Speech Pathology
3.991 Research Audiology
or R92  Research Experimental Phonetics
Statistics beyond introductory course

Courses in computer science:

Courses in psychology (physiological, learning, motivation, personality)

B. Speech pathology

Course listed under A and:

Seminar in areas of interest

Clinical practice

C. Audiology

Courses listed under A and:

3.254 Psychoacoustics
3.255 Psychacoustics Laboratory
3.256 Physiology of hearing
3.257 The Auditory Acoustics Laboratory

Seminar in areas of interest

Clinical practice

D. Speech and language science

Courses listed under A and:

3.254 Psychoacoustics
3.255 Psychacoustics Laboratory

Seminar in areas of interest

Courses in linguistics and psycholinguistics

Courses in biological and physical sciences and mathematics

E. Hearing science

Courses listed under A and:

3.254 Psychoacoustics
3.255 Psychacoustics Laboratory
3.256 Physiology of hearing
3.224 Sensory Processes

Seminar in areas of interest

Courses in biological and physical sciences and mathematics

Students following programs in speech and language science or hearing sciences are normally expected to register for research
credit during each semester of residence.

Clinical Facilities

The clinic training program derives great benefit from the fact
that Iowa City is in the health center of the state and that these
health service facilities are located so that they may be fully uti-
lized in the clinical training of students in speech pathology and
audiology. The University of Iowa Affiliated Speech and Hear-
ing Services are accredited by the Professional Services Board of
the American Board of Examiners in Speech Pathology and
Audiology. These affiliated services include the University of
Iowa Speech and Hearing Clinic; Divisions of Speech and Hear-
ing, Department of Otolaryngology and Maxillofacial Surgery;
Speech and Hearing Services, University Hospital Schools; Speech
and Hearing Services, Polyclinic—Johnston Services for Crippled
Children; Audiology and Speech Pathology, Veterans Adminis-
tration Hospital.

The University of Iowa Speech and Hearing Clinic serves the
University and the general public. Included in its services are
competent evaluations and rehabilitation programs for speech,
hearing and language problems, and a six-week summer resi-
dential 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
problems. This training is enhanced by the use of the modern
facilities of the Wendell Johnson Speech and Hearing Center,
which include audiological testing suites, diagnostic and therapy
suites, a closed-circuit television system and modern equipment
for diagnosis and therapy.

In addition to the clinical training in the University Speech and
Hearing Clinic, such training may also be acquired in sup-
ervised clinical practice with elementary school children, by
arrangement with the local schools and the special education
programs of Johnston and adjacent counties; in supervised clin-
ical practice in speech and hearing services provided by the De-
nartment of Otolaryngology and Maxillofacial Surgery, De-
partment of Pediatrics, Iowa State Services for Crippled
Children, University Hospital School and Iowa City Veterans Ad-
mintistration Hospital; and in internships and consultative
programs with the Iowa School for the Deaf, Iowa Hearing
and Sight School, hospitals and schools for the mentally re-
lated, and other states.

Public and private departments and programs in addition to
those mentioned above often contribute to the cooperative pro-
fessional training, research and service programs.

Research Facilities

Research facilities in the Wendell Johnson Speech and Hearing
Center include a number of fully-equipped laboratories for the
study of the basic processes of speech, hearing and language,
and disorders of these processes. Included are laboratories and
equipment for audiology, phoniatics and general studies of
speech and for audiological, psychophysiologic and neurophysiologic
studies of hearing. Well-equipped mechanical and electronic
shop and trained technical personnel are available for assistance
in research instrumentation.

Cooperation of various departments of the University Hospi-
tals and the College of Dentistry makes it possible to utilize
additional laboratory facilities for the investigation of a wide
variety of research problems. Research opportunities are gener-
ally broadened by the active participation and cooperation of
specialists from various fields, including psychology, child de-
velopment, education, engineering and medicine.
Urban and Regional Planning

3.201 Prerequisite: Neuropathologies of Speech and Language

3.202 Prerequisite: Clinic Practice

3.203 Prerequisite: Clinic Practice

3.204 Prerequisite: Voice Disorders

3.206 Prerequisite: Childhood Language Disorders

3.208 Prerequisite: Stuttering

3.210 Prerequisite: Auditory Rehabilitation

3.211 Prerequisite: Hearing Measurement

3.217 Prerequisite: Disguise Procedures

3.218 Prerequisite: Articulation and Language Disorders

3.219 Prerequisite: Seminar: Stuttering

3.220 Prerequisite: Speech and Language Skills of the Meritant

3.221 Prerequisite: Voice

3.222 Prerequisite: Communication Problems of the Hand

3.223 Prerequisite: Communication Problems of the Hand

3.225 Prerequisite: Clinic Practice

3.226 Prerequisite: Clinic Practice

3.227 Prerequisite: Stuttering

3.228 Prerequisite: Speech and Language Skills of the Meritant

3.229 Prerequisite: Seminars: Psychology

3.230 Prerequisite: Children's Language Development

3.231 Prerequisite: Experimental Audiology

3.232 Prerequisite: Clinic Audiology

3.233 Prerequisite: Auditory Physiology

3.234 Prerequisite: Stuttering

3.235 Prerequisite: Voice Disorders

3.236 Prerequisite: Articulation and Language Disorders

3.237 Prerequisite: Seminar: Stuttering

3.238 Prerequisite: Speech and Language Skills of the Meritant

3.239 Prerequisite: Communication Problems of the Hand

3.240 Prerequisite: Communication Problems of the Hand

Urban and Regional Planning

Program Chairmen: James Spady

Urban and regional planning is a graduate professional program concerned with a broad range of social policy directed toward the improvement and orderly development of the human environment with particular attention to urbanized areas. Preparation for work in this profession involves training in observation, analyzing and interpreting the social, economic, political and technological factors that affect environment. The Department is recognized by the American Institute of Planners as meeting its standards for professional education.

There has been a strong demand for the services of persons with graduate degrees in planning. The profession is at an unusual turning point in its opportunities for collaborative participation with professionals in related fields contributing to planning.

Curriculum

The curriculum is planned for a two-year, four-quarter sequence. The total requirement is 48 semester hours, plus internship.

In the program structure is fostered understanding of the context of planning shaped by the political economy; and of alternatives to present institutionalized public policy, with a human well-being emphasis in analysis; and the developing understanding and skills in a variety of analytical techniques, research methodology and policy-making, recognizing both empirical and normative contributions.

In consultation with his or her advisor, each student develops a program of study related to the student's educational and career objectives and previous education and experience.

These options are available to students with well-defined objectives of specialization:

Social policy and planning, with the additional possibility of a two-semester program with the School of Social Work (see "Joint Program in Social Policy");

Transportation and land use, within the Center for Urban Transportation Studies of the Institute of Urban and Regional Research (see "Joint Program in Urban Transportation");

Law and planning, with the additional possibility of a two-semester program with the College of Law (see "Joint Program in Planning and Law"); or

Individually-determined concentration, reflecting faculty and other resources of the program and the university, with emphasis on analytical methodology, research design and evaluation methodology.
For students entering the program without well-defined objectives of specialization, the experience of the first semester has been designed to provide perspectives and an overview of areas of concentration. The student may develop interests in specialization after the first or second semester, or may choose to proceed as a generalist, covering many of the methodological and substantive areas represented in the available coursework. Regardless of the stage of specialization, students have opportunity for minor emphasis in any of the following:

a. Public policy and program analysis  
b. Community organization and development, citizen and consumer participation, welfare policies  
c. Advocacy planning, theory and clinical experience  

Law as it relates to public policy  
c. Planning legislation  
b. Environmental quality control  
c. Land use controls  

Transportation, land use, urban spatial analysis  
Housing, economic and social aspects  
Design, site planning, physical planning and land use  

The intention of the program is to provide flexibility and options to students to meet individual needs and preferences.

### Plan of Study

#### First Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>102:207</td>
<td>History and Theory of Planning</td>
<td>4</td>
</tr>
<tr>
<td>102:204</td>
<td>Mathematics and Statistics for Planners</td>
<td>3</td>
</tr>
<tr>
<td>102:210</td>
<td>Quantitative Methods for Planning II</td>
<td>3</td>
</tr>
</tbody>
</table>

With the instructor's approval, students completing either 102:204 or 102:210 may elect the advanced course 102:220 Quantitative Methods for Planning II.

**Recommended:**

- 102:213 Analysis of Urban and Regional Economics
- 102:217 Seminar: Selected Problems in Social Policy

**One to three additional hours in modules at one hour each under:**

- 102:201 Concepts and Applications of Planning  
- 102:203 Methodologies in Planning  
- Other courses selected with advisor  

**Total:** 15-18

**Other courses available for first and second semesters:**

- 102:201 Concepts and Applications of Planning  
  (One semterm hour in each of these modules: urban planning practice, power structure analysis, concepts of design, housing, administrative decision-making and law, site planning,)
- 102:203 Methodologies in Planning  
- 102:208 Urban Housing  
- 102:209 Planning Legislation  
- 102:211 Introduction to Urban Transportation  
- 102:213 Issues in Health Planning  
- 102:227 Seminar: Urban Information Systems  
- 102:228 Communities Workshop  
- 102:236 Seminar: Urban Minorities  
- 102:239 Seminar: Collective Decision-Making

In consultation with the faculty, variations from the above can be arranged to reflect capability for advanced work in quantitative methods and economics or study objectives indicating other choices.

**Second Semester**

**Required:**

- 102:206 Planning Research Methods  

**Recommended:**

- 102:220 Quantitative Methods for Planning II  
- 102:214 Public Expenditures and Budgeting  
- 102:228 Community Organization  
- 102:231 Seminar: Social Planning  
- Other credit hours are modules at one hour each under:
  - 102:201 Concepts and Applications of Planning  
  - 102:203 Methodologies in Planning

**Total:** 12-15

**Other courses available for second and fourth semesters:**

- 102:211 Readings in Travel Demand Models  
- 102:224 Principles in Urban Design Theory  
- 102:202 Urban Policies  
- 102:210 Environmental Policy, Planning and Law  
- 102:226 Seminar: Urban Transportation Issues  
- 102:223 Planning and Land Use Controls Seminar  
- 102:238 Seminar: Environmental Quality, Assessment and Implications  
- Plus coursework in other departments

**Third Semester**

**Recommended:**

- 102:209 Planning Legislation  

**Other options**

**Total:** 12-15

**Fourth Semester**

- 102:280 Thesis  

or

- 102:279 Independent Study (thesis or other project)

**Total:** 3
Plan additional credits to meet the re- 
qurement of 48 semester hours, or 51 
if an internship is possible.

**Requirement for Thesis or Major Paper**
Either a thesis for six semester hours credit or a shorter paper or 
project for three or more credit hours is required. The thesis 
may utilize design/physical planning projects, multimedia pres- 
entations or other approaches.

**Internship Employment**
During the summer between the two academic years, each stu- 
dent is advised to secure employment in a planning agency, 
community organization or private firm selected through coun- 
celing with the faculty. Emphasis is placed upon finding oppor- 
tunities in large metropolitan areas or in agencies undertaking 
experimental programs. If relevant internship work is not avail- 
able, options include a systematic program of volunteer work or 
agency observation throughout the second year. A brief paper 
concerning the nature of internship or alternative work is re- 
quired.

**Field Studies**
There are opportunities for second-year students to receive aca- 
demic credit for field work. In the past, students have worked 
with low-income residents of Des Moines and Waterloo. Field 
study can be done on an individual or group basis.

**Joint Program in Planning and Law**
The joint program in urban and regional planning and law, lead- 
ing to separate degrees in each, is offered to educate individuals for active involvement in the resolution of major social, eco- 
nomic and political problems.

The program is designed for persons with broad interests and 
experiences, capable of rigorous interdisciplinary study to pre- 
pare themselves for serious investigation and advocacy for neg- 
glected groups and interests in society, and for the public policy 
formulation process.

In the joint program, 12 semester hours of work in planning 
will be accepted toward the 90-hour requirement for the law degree 
(J.D.), and 12 hours in law will be accepted toward the 48-hour re- 
quirement for an M.A. degree in urban and regional planning. 
Separate admission to each program is required.

**Joint Program in Urban Transportation**
The urban transportation training and research program is con- 
ducted in a broad urban context with emphasis on the interac- 
tion of several academic disciplines in adequately define the 
scope of urban transportation problems as they relate to social, 
economic, political and physical elements of the urban environ- 
ment.

This program is administered by the Center for Urban Trans- 
portation Studies of the Institute of Urban and Regional Re- 
search. Although degrees are not offered in urban transportation, the program in urban transportation may supple- 
ment degrees granted by participating departments and pro- 
gamms, such as civil engineering, economics, geography, 
industrial and management engineering, law, political science, 
sociology and urban and regional planning.

Students must meet degree requirements within their respec- 
tive departments.

Students should submit duplicate copies of application and 
letters of recommendation to the Center for Urban Transporta- 
tion Studies, Institute of Urban and Regional Research, with 
a statement indicating their interest in urban transportation and 
how it relates to their major field.

For further information see Urban Transportation.

**Joint Program in Social Policy**
A concurrent studies program is offered leading to the degrees 
Major of Social Work (M.S.W.) and M.A. in urban and re- 
gional planning. In this program, the School of Social Work ac- 
cepts 12 semester hours of credit in urban and regional planning, 
toward the 25-hour M.S.W. requirement; 12 hours in social 
work may be applied toward the M.A. in urban and regional 
planning. Plans of study are to be worked out with advisers from both programs.

Separate admission decisions are required from each depart- 
m. Formal application is made to the department in which first-semester registration is planned.

**Admission**
For general admissions requirements, see "Graduate College."

Applicants from a wide variety of fields of undergraduate concentrations are eligible for admission. Fields considered most relevant are biology, economics, political science, geography, law, civil engineering and architecture. Each student is expected to have a basic knowledge of economics, American government and statistics. Entering students will be examined in these areas, and exists individual work may be required to reach minimal competence.

**Faculty Roster**
Professor Duscher, Harriet; associate professor Ramsey, assistant professors Sailer, Spady; instructor Siegel; adjunct associate professor Oliver.

**Courses**

102:161 Introduction to Planning 3 a.h.

102:162 Urban Politics 3 a.h.

102:165 Housing Analysis 3 a.h.

102:166 Urban Workshop 3 a.h.

102:168 Graphics Workshop 3 a.h.

102:169 Housing Research 3 a.h.

102:170 Urban Workshop 3 a.h.

102:172 Graphics Workshop 3 a.h.

102:174 Urban Workshop 3 a.h.

102:176 Graphics Workshop 3 a.h.

102:178 Urban Workshop 3 a.h.
Urban Transportation

102:330 Seminar on Special Problems in Planning 3-4 s.h.
This seminar is designed to familiarize students on topics of interest to either an experimental or case-line basis.

102:337 Seminar: Historical Readings in Urban History 3 s.h.
Historical readings of special interest to students in fields related to urban history are offered. The reading is selected on a tentative basis, and students are expected to submit a personal reading list for the semester. Students are required to present a seminar paper related to the material covered in the seminar.

102:347 Seminar: Environmental Problems and Public Policy 4 s.h.
The seminar is designed to develop an understanding of the environmental problems and public policy issues that are related to urban development. The seminar will cover topics such as land use planning, environmental protection, and sustainability. Students are expected to participate in discussions and present a seminar paper related to the material covered in the seminar.

Requirements

- Students must complete at least 20 credits in advanced courses, including 12 credits in advanced courses related to urban transportation.
- Students must complete at least 8 credits in advanced courses related to urban planning.
- Students must complete at least 8 credits in advanced courses related to urban economics.

102:310 Introduction to Urban Transportation 4 s.h.
Students must complete a minimum of 18 semester hours of advanced courses related to urban transportation, including 12 hours in advanced courses related to urban transportation and 6 hours in advanced courses related to urban planning.

Department of Urban Studies

Director: Michael L. McKinley

Urban Growth in Developing Countries

Program Coordinator: Michael L. McKinley

A non-degree graduate program of interdisciplinary and cross-cultural seminars and courses is offered through the Center for the Study of Urban Growth in Developing Countries within the Institute of Urban and Regional Research. Intended to facilitate and coordinate interdisciplinary instruction and research, the program is available to graduate students from departments throughout the University. In addition to a number of related courses offered in specific departments, the program includes a graduate course, Urban Growth in Developing Countries, currently cross-listed in the departments of Anthropology (19:275), Economics (E:275), Geography (44:275), Social Work (42:275), Sociology (34:275) and Urban and Regional Planning (19:275). Taught by an interdisciplinary team, the course introduces students to the analysis of urban problems from a cross-cultural and interdisciplinary perspective. A graduate seminar is intended to provide a forum for graduate students and faculty from a variety of departments to meet regularly to discuss problems of mutual interest. Additional information may be obtained by contacting the program coordinator.

Urban Transportation

Iowa’s graduate program in urban transportation is a training and research program conducted in a broad urban context, with emphasis on the interaction of various academic disciplines to define adequately the scope of urban transportation problems as they relate to social, economic, political and physical elements of the urban environment. This broader framework exists in Iowa in the Institute of Urban and Regional Research, the parent organization of the graduate program in urban transportation.

The urban transportation program is taken in conjunction with a master’s or doctoral program. Academic certification of the program is recorded on the student’s transcript.

Graduate students in any of the following may find the urban transportation program related to their interests: civil engineering, economics, geography, industrial and management engineering, law, political science, psychology, sociology and urban and regional planning.

Program Coordinator: Michael L. McKinley

Urban Growth in Developing Countries

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Graduate students in any of the following may find the urban transportation program related to their interests: civil engineering, economics, geography, industrial and management engineering, law, political science, psychology, sociology and urban and regional planning.

Requirements

Students participating in the graduate program in urban transportation must satisfy the requirements of their departments as well as those of the program. For formal certification, a student is required to complete a minimum of 18 semester hours of urban transportation-related courses, with the student to focus upon urban transportation policy analysis or urban transportation systems analysis. The following are common to both options:

102:111 Introduction to Urban Transportation 2 s.h.
102:226 Seminar: Urban Transportation Issues 3 s.7.
53:772 Urban Transportation Planning 3 s.h.

The remaining semester hours required for the policy analysis option may be selected from the courses below:

65:137 Problems in Urban Economics 3 s.h.
65:201 Regional Economics 3 s.h.
65:202 Urban Economics 3 s.h.
44:115 Political Geography in Cities 3 s.h.
44:116 Political Ecology 3 s.h.
44:130 Location of Services 3 s.h.
44:135 Urban Geography 3 s.h.
44:136 The Inner City 3 s.h.
44:275 Metropolitan Growth and Development 3 s.h.
91:136 Resource Planning 3 s.h.
91:353 Social Welfare 3 s.h.
91:104 State and Local Government 3 s.h.
30:101 Municipal Government and Politics 3 s.h.
36:160 Urban Administration 3 s.h.
36:150 Political Sociology 3 s.h.
36:153 Public Opinion 3 s.h.
36:171 The Urban Scene 3 s.h.
74:172 The Urban Community 3 s.h.
102:002 Urban Politics 3 s.h.
102:007 Planning Legislation 3 s.h.
102:231 Seminar: Social Planning 3 s.h.
Optional coursework for transportation systems analysis may be selected from the following:
60:137 Advertising Theory and Planning
60:176 Operations Management
60:240 Marketing Models
60:241 Psychological Scaling for Marketing Applications
60:262 Applied Organizational Theory
53:179 Traffic Systems Analysis
53:177 Traffic Engineering I
53:173 Transportation Systems I
53:210 Advanced Special Studies: Transportation Network Analysis
44:230 Locational Analysis of Economic Behavior
56:161 Introduction to Operations Research
56:143 Digital Systems Simulation I
56:144 Information Systems Design
56:242 Mathematical Programming I
56:248 Integer Programming and Network Flows
31:124 Introduction to Mathematical Models in Psychology
31:245 Quantitative Methods in Psychology
31:249 Psychophysics, Scaling and Measurement
102:211 Readings in Travel Demand Models

These courses may be applied to either option:
102:222 Student Research Seminar
102:227 Seminar, Urban Information Systems
102:233 Planning and Land Use Control Seminar

Student Support
Fellowships, research stipends, teaching scholarships and summer assistantships are available to qualified students in the urban transportation program. Typically, 15 or more students are supported during the academic year. All supported students are expected to participate in transportation research.

Research
Presently, research is being conducted in transit marketing, analysis and planning; novel behavior-visual split modeling; urban change detection in the continuous phase of urban transportation planning; and network analysis. Latitude is provided for students to develop their own research activities and emphasis is placed on multidisciplinary research whenever possible.

Admission
Application for admission to the graduate program in urban transportation is made by submitting a duplicate of the University application form, two letters of reference and a brief statement relating the nature and extent of the student's interest in urban transportation. This material should be sent to the Director, Center for Urban Transportation Studies, Institute of Urban and Regional Research.

Women's Studies

Women's Studies at The University of Iowa includes a broad variety of courses, both interdisciplinary and within existing disciplines, designed to explore the position of women in social, psychological, economic, political and artistic contexts, and to convey on the exploration through feminist perspectives. Women's Studies courses focus both on material previously neglected by traditional course offerings and on material previously approached from traditional perspectives.

Within the period 1974-1976, an undergraduate major and/or concentration in Women's Studies will become available. Further study of the possibilities for concentration in Women's Studies at the M.A. and Ph.D. levels will be carried on. These concentrations are presently available in some departments, but must be arranged with the individual departments concerned.

In addition to irregularly scheduled University courses, Women's Studies courses are offered in the Saturday Class Program, which is open to University students and to the general public.

A number of non-academic courses for women are offered through the Women's Center.

Among University courses currently offered are:

7F:140 Sex Role Stereotyping and Socialization in Education
7C:150 Problems in Counseling Women
7C:150 Psychological Aspects of Women's Roles
8:161 Women in Literature (same as American Civilization 45:145 and School of Letters 108:175)
16:182 Studies in the History of Women in America (same as American Civilization 45:187)
34:107 Sociology of Women
34:108 Introduction to Women's Studies: Sociology of Sex Roles (same as American Civilization 45:108)
34:264 Socialization and Self-Concept (same as American Civilization 45:203)
45:2 American Civilization II
45:105 American Poetry (same as English 8:124)
45:112 The Popular Image of Women in America
42:125 Child Care Centers: Development and Administration
36:104 Sexual Politics and Small Group Processes
91:086 Sex Discrimination
96:112 Human Sexuality (same as Social Work 42:112 and Home Economics 17:117)

Zoology

department Chairman: Jerry J. Kofoid

Degree offered: B.A., M.S., Ph.D.; also M.S. in biology jointly with the Botany Department

Undergraduate Program

Graduates of the Department meet 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., physiological fields, parasitology, environmental science).

The basic courses offered in the Department serve both its own majors and those planning to enter medicine, dentistry or
related professions. They also serve students in fields such as psychology, anthropology, and sociology. Majors are required to have a modest background in genetics, 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 ecosystems.

The departmental experience is based upon an introductory course which stresses principles. Each student is 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 (cell cycle, cell structure and function, energetics, intercellular metabolism, regulation, increase membrane, and mechanisms of action of nerve and muscle). Beyond these courses, students are given certain choices from a restricted block: embryology, invertebrates, vertebrates, evolution, ecology (at least eight hours), and free choices from nearly all of the other graduate-level courses (12 hours), or a total of 33 semester hours in zoology. Students may substitute four hours of work in botany, microbiology, biochemistry or mathematics (calculus) for four hours of work in zoological courses.

Courses required for the B.A. degree are:

37:3 Principles of Animal Biology 5 s.h.
37:128 Fundamental Genetics 3 s.h.
37:129 Fundamental Genetics Laboratory 1 s.h.
37:105 Cell Physiology 4 s.h.

Eight hours are to be selected from the following list:

37:107 Principles of Modern Embryology 4 s.h.
37:107 Introduction to Zoology 4 s.h.
37:107 Vertebrate Zoology 3 s.h.
37:127 Vertebrate Field Biology 1-2 s.h.
37:131 Vertebrate Paleontology 4 s.h.
37:132 Ecology 4 s.h.

Twelve hours are to be selected from any other undergraduate courses numbered 101-199 and no more than two semester hours may be accumulated in 37:172, 180, 182, 196, 198, 199. A student who has taken 37:107 may not take 37:105. That of these 12 hours may be earned in botany (any course), outcours, general biochemistry (99:165) or microbiology (62:157) or Microbiology 62:157.

Other courses in physics, sciences and mathematics required of undergraduate majors are:

23:60 Elementary Functions 3 s.h.
1:4 Principles of Chemistry I and II 6 or 7 s.h.

or

4.5 Principles of Chemistry 3 s.h.
4.6 Elementary Chemistry Laboratory 2 s.h.
1:41 Organic Chemistry I 3 s.h.
1:42 Organic Chemistry II 5 s.h.
4:13 The Chemistry of Biological Materials 3 s.h.
1:413 Intermediate Chemistry Laboratory 2 s.h.
9:2 College Physics 8 s.h.

or

29:17, 18 Introductory Physics I, II 8 s.h.

Supplementary courses in botany, chemistry, geology, microbiology, mathematics and physics are recommended.

For general degree requirements see "College of Liberal Arts."

Honors
Students in the College-wide Honors Program may earn an Honors degree in Zoology by fulfilling a total of at least one semester hours of work is 37:196 Honors Laboratory Research, 37:197 Honors Readings in Zoology, and 37:198 Honors Seminar.

Introduction to Research

The departmental program offers membership in a small, active group of undergraduates with common interests, and association with one of the Department's research groups. Experiments, running discussions of current research, the study of specialized topics and attendance in research lectures are pursued of practicing scientists to which the students are introduced. An introduction to research activities can be obtained either in or outside the scope of the Honors Program and may be pursued in summer as well as during the academic year.

Graduate Programs

The various graduate programs of the Department 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. More than 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, neurochemistry, in the vertebrates, 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 constituted into four general areas: developmental biology, ecology and behavior, genetics, physiology. Each student selects one of these areas as a specialty, and is thereafter advised by the faculty of that area; his or her progress toward meeting the requirements of the advanced degree program is monitored by the faculty of that departmental area.

The faculty area committee can specify courses which must be taken or studied. It can recommend that particular teaching or research experiences be sought. It has the obligation of offering advice and counsel. It is responsible for producing the M.S. examination, administering it and providing faculty members for the formal committees which oversee M.S. thesis and evaluate the examinations. When a student is approved for continuation toward a Ph.D. degree, he or she selects an advisory committee of six (one from outside the Department), and that committee is thereafter responsible for advising and monitoring the student's progress.
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 courses in zoology required to make up deficiencies revealed by the diagnostic examination (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 conducted mainly with 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 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 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

Thirty semester hours of graduate credit are required of all students. Ordinarily six to eleven 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 elective courses. Following acceptance of the thesis, the student's advisory committee recommends the student for the graduate program 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 offer 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 laboratory requirements that 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 prerequisites (such as ability to read certain modern foreign languages) which the candidate must meet. The background, or lack thereof, of the candidate is determined by an oral examination. In this examination the candidate is expected to demonstrate knowledge of the fundamentals of zoology and acuity in one or two specialized fields. Usually the student has demonstrated some ability in research through the M.S. thesis, or through equivalent research work. In his or her research, which culminates in the doctoral dissertation, all of the requirements for a scholarly piece of work will be demanded. The acceptance of the thesis by the Department will be followed by the final oral examination over the thesis itself and the specialized field which it represents.

Graduate Student Awards and AIDS

At least 60 percent of the graduate students in the Department receive some support, the largest number from teaching assistantships, scholarships and research assistantships, provided either through the Graduate College or from individual research grants administered by faculty members. Stipends and full tuition are available in federally-funded developmental biology and neurobiology training programs administered by the Department. Two training programs in postdoctoral fellowships.

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 coasts, or at other appropriate summer stations. Most assistantships and other appointments 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 appointment should include clear statements of research interest, if such interest has been defined at the time of application.

Orientation

Prior to registration in August, all new graduate students take a diagnostic examination covering topics in developmental biology, genetics, physiology with an emphasis on cell physiology, evolution and ecology. On the basis of examination results, students may be excused from further work in one or all of these fields, or required to take specific courses to enhance their background in the area. These requirements are made to ensure breadth of background for 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 is the province of the student's degree committee.

Admission

An applicant for graduate admission should have a grade-point average above 3.0 in the Graduate Record Examination Aptitude (Verbal + Quantitative) score above 1200. The ORS Advanced Biology score should also be submitted. Although the Department prefers applicants who have completed undergraduate programs much like its own, it will consider applicants with other backgrounds, such as biophysics, biochemistry and other related areas.

Special Facilities

The Department is housed in a cluster of contiguous buildings, with the additions completed in 1965 and 1971 more than doubling previously available research space, nearly doubling teaching space and permitting enlargement of the departmental library.
Many of the laboratory courses in the Department depend heavily upon the availability of living animals, and the department is provided with animal-care facilities for mammals, birds, reptiles, amphibians, fishes, insects and invertebrates of various sorts, including protists. 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 cultures 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 has the scanning electron microscope facility of the University. The Department is equipped to carry out research in all areas in which graduate teaching is conducted. Light microscopes of a variety of types are available, including those with phase contrast and polarizing capacities, and those with Nomarski optics. Centrifuges of various sorts, including refrigerated, high-speed and ultra-high-speed models, are available.

Other special equipment includes ephemerostere, and chromato
graphy apparatus; electron and recording equipment for scopophotobiological studies; a PDP-12 computer, a Wang calculator, and other desk top computers; gas flow and flow scintillation counters for radionuclide detection and ana
yzing, including a gas-flow chromograph scanner and a gas-flow counter; constant temperature bath units of various types for mammal and growth chambers; eggs and incubators; recording UV and visible spectrophotometers; densitometers; Coulter counters, instruments and a field vehicle for field work in physi
cal ecology; water tables, aquaria and "instant ocean" micro
nanipulators; tissue culture rooms and hoods, and cold rooms. Laboratories are otherwise equipped for advanced work which calls for specialized biochemical, biophysical, cytological or semiotics techniques.

Iowa Lakeside Laboratory

Courses in field biology and aquatic biology extend the on-campu
work in physiology. See "Division of Extension and Universi
ty Services."

Special Faculty Strengths

A Biological Sciences Development Award from the National Science Foundation has enabled each faculty member to have a sufficient research space for personal needs and for the needs of the graduate students carrying out their research. Each faculty member carries on an active research program; the breadth and variety of these can be deduced from the breadth and variety of assignments and seminars offered.

Faculty Roster

Professors: Boehringer, Dings, Frankel, Kessel, Koloves, Milk
tman, Moeller, Spinzi, Williams; professors emeriti: Beans, Marsh, Noll, Slick; associate professors: Heggeman, Korte, So
las; stay, assistant professors Barrett, Cain, Griss, Murr
pey, Newton, Platt, Soll.

Courses

Primarily for Undergraduates

(Courses numbered 31:35-25 may not be counted toward the Zoology major.)

31:35 Principles of Animal Biology 4 s.h.

Major concepts of biology, priority of animal life, forms of living organization, morphology, life cycles, reproduction, development, genetics, ecology; evolution; provides foundation for advanced study in biological science. Introduction to college chemistry 41:1, 2, 3 or 41:7 is strongly recommended. Prerequisite for all courses in the Department numbered 31:102 and above.

31:102 Introduction to Animal Biology 3 s.h.

Lectures cover principles of animal biology. Experiments in student research. Prerequisite: prior to six semester hours of introductory systematic biology or biology.

31:20 Topics in Genetics and Biology 2 s.h.

Covers genetic principles, population genetics, examples, e.g., sickle-cell anemia, polygenic traits, logical and other implications.

31:20 Lectures on Evolution 2 s.h.

Lectures on evolution. Prerequisite: special examples of animal and plant history; important concepts such as gene pool and natural selection; some of the meanings for human biology.

31:23Intro 

to Animal Biology 3 s.h.

Integration of functions in animals and plants, history of human, normal sys

tem and cellular mechanics in controlling life processes.

31:23 Synthesis and Human Affairs 3 s.h.

Interrelations of different organisms in the earth's ecosystem; some of the levels of de

scription in the organism, some aspects of how man, as a part of the model organism, has influenced human health, economy and cultural development; lectures and laboratories.

31:69 Introduction to Animal Behavior 3 s.h.

Survey of principles and concepts in animal behavior and their implications for man, illustrated by non-mammal examples; major by permission. Prerequisite: a course in biology or psychology.

31:87 Principles of Human Genetics 3 s.h.

History of human facilit and populations; genetic basis of normal and abnormal traits; human behavior; sex determination. Lectures and discussions. Prereq:

istics, transference course in biology.

For Undergraduates and Graduates

31:100 Principles of Modern Embryology 4 s.h.

Current understanding of developmental biology as derived from both standard and

modern experimental embryology; applications of techniques and concepts of molec

ular biology; laboratory emphasis on vertebrate developmental anatomy. Prereq:

31:37. Chemistry 4:6 or 4:3; 31:128 recommended.

31:102 Comparative Vertebrate Anatomy 4 s.h.

Reactions, function and evolution of vertebrates. Lectures, demonstrations, labora

tory. Prerequisite: 31:218 or equivalent.

31:104 Lectures in Modern Embryology 3 s.h.

Current understanding of developmental biology as derived from both classical and

modern experimental embryology; applications of techniques and concepts of molec

ular biology. Prerequisite: 41:21 or equivalent.

31:165 Cell Physiology 3-4 s.h.

Functions contrast in all cells, including muscle anatomy and synthesis of pro
cesses and neural cells, and energies, mass and properties of cell membranes, nucleo

type and nuclear events. Prerequisite: 31:23. Chemistry 4:121 and Physics and Astronomy 29:2, or consent of instructor.

31:197 Invertebrate Zoology 4 s.h.

Animal, phylogeny, evolution, behavior of protozoa, invertebrates and protozoa, invertebrates ('"worms"), phylogenies, arthropods. Prerequisite: 31:165 or equiva

31:198 Vertebrate Zoology 4 s.h.

Biology of vertebrates and related important animals: emphasis on evolution, adaptation and human history. Prerequisite: 31:165.

31:199 Genetics 3 s.h.

Structure, behavior, function of hereditary material, evolutionary emphasis on plants and animals. Optional for non-bios. 31:191 or 31:192.

31:110 Introduction to Microscopic Techniques 4 s.h.

Lectures and laboratory work during with light, fluorescence, scanning, accen

tuating and viewing of tissues and organs; for light microscopes and electron microscopes study; course also includes description of microscopes; radioautography and essential electron microscopy. Prerequisite: 31:31 or consent of instructor.

31:128 Oral, Vertebrate and Organ Biology 4 s.h.

Lectures and laboratory dealing with microscopic structure in relation to function in cells, tissues and organs of various animals; emphasis on human or mammal. Prerequisite: 31:31 or equivalent.

31:165 Principles of Animal Biology 4 s.h.

Morphology, physiology and general importance of parasites of man and animals; laboratory practical experience; emphasis on non-parasite relationship. Prereq:

31:31 or equivalent.
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 1959 its name was changed to College of Business Adminis-
tration.

The College offers the degrees Bachelor of Business Adminis-
tration, Master of Business Administration; Master of Arts in Accounting, Business Administration and Economics; and Doc-
tor of Philosophy in Business Administration and Economics.

Three undergraduate and graduate programs are fully ac-
ccredited by the American Assembly of Collegiate Schools of
Business. Each program is administered by an academic pro-
gram committee with both faculty and student membership. The
College consists of four departments—Accounting, Business
Administration, Business Education, Economics—and the Cen-
ter for Labor and Management.

Undergraduate Study

The College offers the Bachelor of Business Administration de-
gree in all four of its departments. The B.B.A. student com-
pletes 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.

Program Requirements

Iowa’s B.B.A. curriculum requires a minimum of 120 semester
hours for graduation, with at least 48 hours in business courses
and at least 48 hours in nonbusiness courses. Thus a student
must develop more breadth in his or her program than that
required in a traditional business program. Students are encou-
aged to develop a great deal of breadth, but may also develop
some measure of specialization. In most instances the student
will be able to complete the program a semester or summer ses-
sion sooner than the typical four years.

The last 30 or 45 of the last 60 semester hours must be
earned in residence at Iowa following admission to the College
of Business Administration, and at least 24 semester hours of
credit in courses offered by the College of Business Administra-
tion, and at least eight semester hours of credit in the student’s
major or area of concentration, must be earned at Iowa.

If the quantitative methods, accounting and economics re-
quired are not satisfied when the student is admitted to the
College, they may be undertaken in the first enrollment and
continued until successfully completed. In general, all common
requirements should be completed by the end of the student’s
junior year.

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 at-
tempted, all business and economics coursework attempted at
Iowa, all coursework attempted in the major or area of concen-
tration, and all coursework attempted at Iowa in the major or
area of concentration.

Common Requirements

The B.B.A. candidate must satisfy these minimum common re-
quirements:

- Rhetorical-communicative: 6 s.h.
- Historical-cultural: 6 s.h.
- Literature: 6 s.h.
- Natural sciences (excluding mathematics): 3 s.h.
- Sociology or psychology (two courses in one area): 6 s.h.
- Quantitative methods: 8 s.h.
- Accounting: 6 s.h.
- Economics: 6 s.h.
- Finance: 3 s.h.
- Legal environment: 3 s.h.
- Management: 3 s.h.
- Marketing: 3 s.h.

In addition, the 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 adviser. Each area must consist of
three courses (9 s.h.), and two courses in each area must be of-
fered by the College of Business Administration.

Credit by Examination

Students may earn up to 32 semester hours of credit by exami-
nation. Selected tests from the College-Level Examination Pro-
gram (CLEP) of the College Entrance Examination Board are
used. It is possible to receive exemption with or without credit
for most of the common requirements of the College. Informa-
tion on the CLEP examinations is available from the Liberal
Arts Advisory Office.

Maximum Schedule

Course schedules of more than 18 semester hours for a semester
or nine for a summer session require approval of the assistant
dean.

Pass/Fail Grading

Of the total semester hours required for a B.B.A. degree, up to
32 may be taken on a pass/fail basis with the consent of the ad-
viser and instructor. However, a student may not count more
than 16 semester hours of pass/fail credit in 401 or her last 60
semester hours of coursework. Courses with the 6A, 6B or 6E
prefixes which are taken to satisfy the common business require-
ments may not be taken pass/fail, nor may courses in the stu-
Admission
Admission requires at least sophomore standing. Unconditional admission requires at least a 1.25 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 College of Liberal Arts and Sciences requirements and one of the common requirements listed above: historical - cultural, literature, psychology or sociology, or quantitative methods.

At most 60 semester hours, or equivalents, of transfer credit will be accepted for a student transferring from a two- year institution. Transfer credits for business and economics courses taken during the freshman and sophomore years are counted toward the B.B.A. degree only if such courses are normally offered as lower division courses at Iowa.

Graduate Study

Interdepartmental Programmes

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 students whose undergraduate majors were in liberal arts, science, engineering, or other nonbusiness areas, as well as for graduates of schools or colleges of business administration. For the student who has taken an undergraduate business administration course, 54 semester hours of coursework are required.

Background coursework

The following courses, totaling 25 semester hours, are normally required of the student with a nonbusiness baccalaureate degree.

A student who majored in business may take any of these courses or the ones not already taken. This work is normally taken in the first year of the M.B.A. program.

6B:214 Financial Accounting
6B:254 Human Resources Management
6B:281 Quantitative Methods
6B:282 Statistical Methods—M.B.A.
6B:285 Financial Management
6B:287 Management
6B:287A Applied Organizational Psychology
6B:287B Price and Employment Theory

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 Iowa.

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 M.B.A. adviser, selects six semester hours of coursework in that area.

Examples of areas of concentration which might be taken: accounting, finance, industrial relations, international business, marketing, operations research, organizational theory, quantitative methods, risk management and insurance, and systems management.

The following are the core course requirements, totaling 30 semester hours:

6A:214 Managerial Accounting for Management
6B:281 Financial Accounting
6B:282 Quantitative Methods—M.B.A.
6B:282A Applied Organizational Theory
6B:282B Statistical Methods—M.B.A.
6B:287A Simulation Exercise—M.B.A.
6B:287B Administrative Policy—M.B.A.
6B:287C Analytical Methods—M.B.A.

As an alternative to 6B:287B-279, the student may take 6B:291.

6B:291 M.B.A. Seminar
6B:292 National Income Analysis
6B:293 Area of Concentration

Elective

Doctor of Philosophy in Business Administration

The Ph.D. 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 program 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 examinations, and they 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
Accounting

The Dissertation. Normally, the original research, writing and the oral examination in defense of the dissertation require at least one year of full-time effort.

Graduate Admission

See "Graduate College."

Facilities

The College is located in Phillips Hall, an air-conditioned high-rise building designed especially for programs of the College. Completed in 1963, the building contains seminar and conference rooms, an auditorium 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. Additionally, students have direct access to a complete computer laboratory within the College. The laboratory serves the instructional programs of the College, and the staff maintains a current library of computational programs and data tapes to service user needs.

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. Current industrial relations and administrative 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.

Accounting

Department Chairmen: Louis F. Biggiard
Degrees offered: B.B.A., M.A.

Accounting is the systematized recording, classifying and interpreting of the economic facts of a business or other institution, 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; therefore, graduates in this field tend to advance to executive positions. Many state and federal governmental agencies employ accountants. The demand for certified public accountants (CPAs) continues to increase. A CPA may work for one of many regional, national or international firms, or he or she may establish an independent practice.

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), auditing concepts and procedures and senior seminar in accounting.

In addition to courses required of all candidates for the degree of Bachelor of Business Administration, the undergraduate major in accounting consists of accounting courses totaling 18 semester hours as follows:

6A:115 Income Tax Accounting 3 s.h.
6A:130 Accounting for Management Analysis and Control 3 s.h.
6A:131 Financial Accounting: Assets and Liabilities 3 s.h.
6A:144 Auditing 3 s.h.
6A:145 Senior Seminar in Accounting 3 s.h.

The student may take an elective accounting course beyond the basic accounting core.

A maximum of 27 semester hours of credit in accounting courses may be counted toward the B.B.A.

A special program of financial aid is provided annual awards to students in accounting through contributions from several major industrial and public accounting firms.

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 3 s.h.
6A:221 Empirical Research in Accounting 3 s.h.
6A:222 Contemporary issues in External Reporting 3 s.h.
6A:223 Contemporary issues in Managerial Accounting 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 non-thesis option may be elected. In either case the candidate must examine 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.

Faculty Roster

Professor Barnes; professor emeritus Maynard; associate professors Kinghorn, Kieney, Lenzkis, Smith; assistant professors Statley, Capetini, Eskew, King, Rims, Ucker.

Courses

Primary for Undergraduates

6A:1 Introduction to Accounting I 3 s.h.
6A:2 Introduction to Accounting II 3 s.h.

For Undergraduates and Graduates

6A:114 Financial Accounting 3 s.h.

Survey of current practices and thought relating to external reporting by firms in its immediate, recent and critical aspects, with an emphasis on ethical questions and legal controls. Credit is given for the course or in combination with 6A:114.

6A:115 Income Tax Accounting 3 s.h.

Introduction to federal income taxation, structure and procedure, implications for individual and business decision-making. Prerequisites: 6A:114 or 6A:116 or equivalent.

6A:130 Accounting for Management Analysis and Control 3 s.h.

Concepts and methods used in internal financial information systems, computerized and non-computer-based decision making, design and implementation of computerized decision-making aids. Prerequisites: 6A:131 or equivalent.

6A:131 Financial Accounting: Assets and Liabilities 3 s.h.

Concepts and methods of preparing financial statements, principles of financial reporting practices analyzed in context of current decision models and one prepared alternative accounting methods; preparation of major external reports-comparative, balance sheets, income and cash flow statements. Prerequisites: 6A:132 or equivalent.


Construction of 6A:131; general principles of preparing external reports as such business combinations, consolidated financial statements and mergers; financial and non-financial performance measures and analysis. Prerequisites: 6A:131 or equivalent.

6A:134 Auditing 3 s.h.

Review of internal controls in accounting systems and consideration of audit objectives, standards and procedures necessary in test integrity of accounting systems and financial reports. Prerequisites: 6A:130 and 6A:132 or equivalent.

6A:135 Empire Seminar in Accounting 3 s.h.

Advanced topics in auditing; topics include cost analysis, budgeting and systems design; financial reporting for special situations, such as in consolidated and non-consolidated partnerships and organizations; approaches to tax decisions through planning and research. Prerequisites: 6A:115, 6A:150, 6A:152 and senior standing.

6A:170 Special Topics in Accounting 3 s.h.

Elective course for senior accounting majors; advanced topics in accounting covered in greater depth, normally offered only upon student and faculty request. Multiple sections offered if more than one topic desired. Prerequisites: consent of instructor.

Primary for Graduates

6A:214 Accounting for Management 3 s.h.

Current financial information system; accounting information analyzed and synthesized in context of management-decision systems and model; normative, behavioral, behavioral and quantitative analyses employed as basis for management and display of accounting data. Prerequisites: 6A:134 or equivalent.

6A:215 Financial Information for External Users 3 s.h.

Current and historical financial statements analyzed in context of current decision models and prepared alternative accounting methods; systematic procedures for preparing financial statements. Prerequisites: 6A:114 or equivalent.

6A:225 Accounting Literature and Research 3 s.h.

Major concepts and problems in accounting as reflected in current literature and research; topics include economics of accounting choices, research methodology and association, computers and quantitative analysis. Prerequisites: 6A:115, 6A:150, 6A:152 and senior standing.

6A:255 Accounting for Managerial Use 3 s.h.

Methods of research and their relationship to accounting problems; problem formulation, research design and methodology; each student is expected to complete a research project. Prerequisites: 6A:214 and 6A:215 or equivalent.

6A:271 Empirical Research in Accounting 3 s.h.

Major concepts and problems in accounting as related to current applications and to basic research in the field; topics may include research methods, topics in theoretical research, special research management, research policy, current issues in research.
Business Administration

Department Chairmen: Anthony V. Shimpral

Degree offered: B.B.A.

The purpose of Iowa's undergraduate program in business administration is to give the student a general overview of business with an emphasis 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 organization. Designed to teach students about business rather than how to conduct business, the program's behavioral approach stresses the concept of human interaction in business and society at large.

Students graduating with the B.B.A. in business administration have a wide range of career choices. The largest number go into marketing. Many are employed by financial institutions and in senior management positions. Others enter government service and other nonbusiness fields requiring administrative skills. Many continue their studies toward advanced degrees. There is considerable latitude within career areas. For example, the average open to a business administration graduate with a major in marketing include advertising and promotion, costing, product development and improvement, and product distribution.

The 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 semester 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:

Requirements for the Major in Finance

6B: 15 Financial Management
6B: 111 Investments
6B: 112 Security Analysis
6B: 113 Intermediate Financial Management
6B: 114 Commercial Banking.

At least two semester hours of accounting beyond the basic core are also required.

Requirements for the Major in Financial Economics

6B: 15 Financial Management
6B: 103 Managerial Economics
6B: 103 Microeconomics
6B: 111 Investments
6B: 114 Commercial Banking

Two of the following:
6B: 177 Money and Banking
6B: 110 Economics of the Government Sector
6B: 141 Industrial Organization

Requirements for the Major in Insurance

6B: 20 General Insurance
6B: 121 Property and Liability 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: 21 Insurance Mathematics
6B: 123 Public Economic Security Programs
6B: 124 Risk Management

Six additional hours of courses are specified by the student's advisor.

Requirements for the Major in Industrial Relations

6B: 154 Human Resources Management

One of the following:
6B: 150 Minority Rights in an Industrial Society
6B: 152 Labor Relations Legislation

One of the following:
6B: 153 Collective Bargaining
6B: 155 Employee Relations in the Public Sector

One of the following:
6B: 111 Labor Economics
6B: 151 Senior Topics in Industrial Relations
6B: 154 Psychology in Management
6B: 165 Occupational Sociology

Requirements for the Major in Management Systems

6B: 12 Computer Methods
6B: 159 Management Information Systems
6B: 175 Operations Management
6B: 177 Simulation Methods

One of the following:
6B: 160 Topics in Management Information Systems or any alternative course approved by the student's advisor.

Requirements for the Major in Management Science

Two of the following:
6B: 10 Quantitative Analysis
6B: 11 Statistical Analysis
6B: 12 Computer Methods
Master of Arts Program

The Master of Arts Program in business administration is designed for the student who seeks an opportunity for intense specialisation and a research experience through the writing of a thesis. Whereas the student aspiring to be a business or public administrator would normally seek the M.B.A. degree, the M.A. student might be contemplating a research or teaching career in a specialized area of business, or employment in a business-related position requiring some degree of specialized knowledge. A student may take the master's degree as he or she proceeds toward a Ph.D. degree.

The M.A. program is flexible, to permit specialization according to the student's interests and objectives. The student may select major in finance, insurance, management, marketing, quantitative analysis, international business, industrial relations or other areas. The minor may be developed from approved course combinations within the College of Business Administration or, under special circumstances, elsewhere in the University.

Semester hour requirements for the Master of Arts degree in business administration include:

<table>
<thead>
<tr>
<th>Area</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major area</td>
<td>9</td>
</tr>
<tr>
<td>Minor area</td>
<td>6</td>
</tr>
<tr>
<td>Economic theory and business organisation and administrative behavior</td>
<td>6</td>
</tr>
<tr>
<td>Thesis</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
</tr>
</tbody>
</table>

The 30 hours are normally earned in courses exclusively for graduate students (200 level), but, where appropriate, the student may take courses at the 100 level. Coursework beyond the 30-hour minimum may be required if the student's undergraduate preparation does not permit him or her to take graduate courses in a selected area.

The student will be required to defend his or her thesis in an oral examination, and may be required to take a written and/or oral comprehensive examination over his or her coursework.

Courses

Primary for Undergraduates

6110 Quantitative Analysis 3 s.h.

6111 Statistical Analysis 3 s.h.

6112 Computer Methods 3 s.h.

6115 Financial Management 3 s.h.

6130 General Insurance 3 s.h.

6131 Insurance Mathematics 3 s.h.

6132 Introduction to Marketing 3 s.h.

6133 Introduction to Law 3 s.h.

6134 Administrative Organization 3 s.h.

6135 Production Management 3 s.h.

Courses for Undergraduates and Graduates

6136 Directed Readings in Business Administration 3 s.h.

Faculty Roster


Courses

Any M.A. student without computer programming competence is expected to enroll in a credit or non-credit programming course available at The University of Iowa.
In addition to the general requirements for the Bachelor of Business Administration degree, these courses are required of all business education teaching majors:

65:191 Principles of Business Education
75:181 Seminar: Curriculum and Student Teaching

In addition, the student must choose from one of these two teaching options:

**Business Major Option**

Complete the requirements for a major in one of these areas in the College of Business Administration:

Accounting
Economics
Finance/Insurance
Management/Administrative Behavior
Marketing
Administrative Services

Requirements for the Administrative Services area are described below. For all other areas, see the appropriate departmental sections.

**Areas of Concentration Option**

Complete one nine-hour sequence from each of two of the following areas in the College of Business Administration, in addition to the courses required in the business administration core:

Accounting
Economics
Finance/Insurance
Management/Administrative Behavior
Marketing
Administrative Services

Requirements for the Administrative Services Major

65:22 Business Typewriting Problems 2 s.h.
65:23 Word Processing 2 s.h.
65:35 Business Machine Applications 2 s.h.
65:155 Business Data Processing 3 s.h.
65:125 Administrative Communication 3 s.h.
65:126 Written Communication in Business 3 s.h.
65:145 Office Management 3 s.h.
16 s.h.

**Teacher Certification**

The courses required for the Iowa Professional Teaching Certificate can be found in the College of Education section of this Catalog.

**Courses for Nonmajors**

Two areas of concentration in business education, consisting of a minimum of three courses (9 s.h.) in each area, 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 bachelor's certificate and has either a major or a minor teaching area in business education. Sufficient flexibility is provided in the program to meet individual needs for upgrading professional competence in teaching the business subjects.

A minimum of 32 semester hours must be included in the program, with an approximate distribution of hours among these three areas of study:

- **Business Administration**: 12 to 15 semester hours of courses must be selected in business administration areas, with the approval of the adviser. Available areas are 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 adviser.
- **Education**: Six to nine semester hours must be selected from professional education courses with the approval of the adviser. Available areas are adult education, educational administration, educational media, educational psychology, measurement and statistics; higher education; social foundations, and comparative education, and special education.

These two-hour examinations or two three-hour examinations are required in business administration, business education or secondary education (one exam for each area to be tested). An area is defined as six or more semester hours in related courses.

**M.A.T. Program**

The M.A.T. program is a 38-semester-hour nonthesis course of study. It is designed for superior liberal arts graduates who have had few or no education courses. The program enables the student to enrich his or her background by completing graduate courses in a substantive area and graduate education courses which constitute professional preparation for secondary school teacher certification.

Two semesters and 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:

- Audiolingual Teaching Methods
- Social Development of the School-Age Child
- Principles of Guidance
- Construction and Use of Classroom Tests
- Preprofessional Seminar
- Educational Psychology
- Philosophy or History of Education
- Methods (credit arranged)
- Observation and Laboratory Practice

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 culture 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.

Degree Requirements

- Two oral areas to be chosen from foreign language, statistics, advanced mathematics, computer programming, scientific method, or other appropriate research tool approved by the advisor.
- At least nine semester hours of doctoral-level coursework, approved by the advisor, in each of the following 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 baccalaureate degree, including the dissertation.
  E. Comprehensive examinations; three hours in each of the areas of study
  F. Dissertation

Admission Requirement

- Admission to The University of Iowa Graduate College; and
- Evidence of satisfactory performance on the Graduate Record Examination; and
- Evidence of good academic preparation to undertake doctoral work in business education.

Faculty:

Professors: Billings; associate professor Nettleman; assistant professors Nisius, Zuber.

Courses

Primary for Undergraduates

681 Basic Typewriting 3 s.h.
Basic organization and operation of standard-A type writers. Open only to students with no formal training.
682 Business Typewriting Problems 2 s.h.
Through exercises in speed, accuracy, and integration of skills and knowledge acquired in writing problems related to the production of letters, forms, memos, reports, and similar documents. Open only to students who have completed some formal training in typing, or who have the permission of the instructor. Prerequisite: 681 or equivalent.
6846 Basic Short Hand 3 s.h.
Short-hand theory and intensive development of skill through business dictation and transcription. Open only to students with two years of high school shorthand or equivalent, or those passing the shorthand test 6846. 1 hour of instruction.
6842 Transcription 3 s.h.
Review of shorthand theory; development of advanced skill in taking business dictation and in transcription. Prerequisite: 681 or equivalent, 682.
6825 Word Processing 3 s.h.
Basic processes for efficient automation of business information, including automatic typewriting/editing systems, machine transcription and duplicating processes, and information procedures at the administrative level. Prerequisite: 65 or equivalent.
6836 Business Machines Applications 3 s.h.
Development of operational efficiency in using all types of machines, paper, printing, and electronic equipment; emphasis on business applications and problem-solving techniques, teaching equipment and business statistical literature.
6835 Administrative Communication 3 s.h.
Identification and study of communication through language; essential managerial functions; organizational, psychological, and cultural processes, communication skills, organization, and management of written materials required in organizations, and for personal and professional needs.
6820 Written Communication in Business 3 s.h.
Application of communication theory in business communications including business reports, memos, procedures and other written forms; psychological approaches in written problem-solving. Prerequisites: satisfaction of English requirement or equivalent, and junior standing.
684 Office Management 3 s.h.
General principles of information processing and management and related functions: human factors and systems used in the information production process. Prerequisite: junior standing.
6835 Business Data Processing 3 s.h.
Information needs of management systems; processing data; introduction to data system analysis, design and business programming; managerial considerations in data processing. Prerequisites: standing in junior year. Prerequisites: junior standing.
6831 Principles of Business Education 3 s.h.
Principles, practices, problems and philosophy of business teaching and professional responsibilities of business education in the secondary school. Offered in spring semester only.
6867 Methodic Business Subjects 3 s.h.
Study of objectives, content, materials and methods for teaching business subjects. Students may enroll for six to nine semester hours of credit from the following sequence: typewriting (one semester hour), shorthand (one semester hour), office location (one semester hour), bookkeeping/typing (one semester hour), basic business (two semester hours), accounting given only for each method, area completed. Prerequisites: 6831 and consent of instructor. Offered Fall and Summer semester only. Same as 7211.
6869 Organization and Administration of Cooperative Programs 4 s.h.
Objectives, operation and administration of vocational, business and technical education programs. Required of cooperating teacher coordinators of office education programs. Summer semester only.
6869 Individual Preparation Techniques 2 s.h.
Procedures of preparing classroom instruction with on-the-job training in office and business education programs. Required for teacher certification of office education programs. Summer semester only.
6872 Principles of Business Education 3 s.h.
Study of vocational education programs with special emphasis on curricular development and the relationship between business education and society. Required for teacher coordinators of office education programs. Summer semester only.
6875 Special Problems 2 s.h.
Individual and special problems for study under either independent study or group study basis. Prerequisite: consent of instructor.
6876 Business Education Workshop 3 s.h.
Intensive programs on instructional methods, evaluation, trends and innovations in business education. Offered summers only.

Primary for Graduates

6206 Seminar: Basic Business 21 s.h.
Development of international techniques and materials, instruments of research for teaching the basic business subjects.
6206 Seminar: Teaching Accounting 3 s.h.
Annotating principles and cyclical analysis, application of approaches, techniques and materials available, research findings applied in accounting analysis of financial, managerial and internal processes. Primarily for high school and community college teachers of bookkeeping, accounting and data processing subjects.
6207 Seminar: Information Technology 3 s.h.
Information-processing concepts (including medical, mechanical and electronic systems) for the classroom teacher and administrator; development of curriculum materials, analysis of teaching methods and evaluation problems.
Economics

Degree Chairman: Jerold Baxand

Economics is concerned with the organization of production and consumption in society, and the associated welfare of the people. The major is designed for those students who plan to enter business, industry, or public administration.

Undergraduate Major

The bachelor's degree program in economics provides an excellent educational background for a variety of positions in business and government. Graduates find employment in banking, finance, insurance, and other public and private organizations. The economics major is also regarded as excellent preparation for law school and for graduate study in such fields as business administration, public administration, health and hospital administration, urban and regional planning, management, journalism, and social sciences.

The Department offers undergraduate degrees in economics—the B.A. and B.S. degrees in the College of Liber Arts, and the B.B.A. in the College of Business Administration. The B.A. and the B.B.A. are the same in terms of the economics major requirements, but differ in their College requirements. The B.A. degree in economics is designed to allow the student maximum flexibility in choosing a well-rounded liberal arts education. The College of Business Administration requirements associated with the B.B.A. degree in economics emphasize a background in the business fields of accounting, finance, marketing, business law, and management.

For a description of the B.A. and B.S. degree programs in economics, see the College of Liber Arts section of the Catalog.

Program for the B.B.A. Degree

In addition to the common requirements for students in the College of Business Administration, the B.B.A. degree in economics requires 18 semester hours in 150-level economics courses, including E5:102 or E5:103 Microeconomics and E5:104 or E5:105 Macroeconomics.

Candidates for the B.B.A. degree may meet the requirements for the degree through an alternate program by meeting the common requirements in the College of Business Administration and completing two areas of concentration, each consisting of at least three courses (nine semester hours), two of which must be courses offered by the College of Business Administration. A student may select courses from those offered by the Department of Economics to fulfill the areas of concentration requirements. The two areas of concentration must be approved by the student's advisor.

Graduate Programs

The Department offers graduate instruction leading to both the M.A. and Ph.D. degrees. The Department enjoys a respected position within the national academic rankings for its area of expertise in applied economics and public policy. Faculty members have gone on to occupy professional positions in education, government, and industry. They hold academic posts in major universities and colleges all over the nation. Many hold positions in the federal government, e.g., departments of state, agriculture, commerce and treasury, district. Federal Reserve Banks and Federal Reserve Board and the U.S. Tariff Commission.

Others have made careers in industry and in private research organizations such as RAND, the Brookings Institution and Arthur D. Little. Staff others have served in various economic capacities abroad for the State Department, the United Nations, and the Ford Foundation.

Master of Arts

The M.A. degree is designed to offer the student rigorous training in applied economic analysis. Incoming students who feel that they wish to earn the Ph.D. but who are initially unqualified are advised to enroll in the Ph.D. program so that both degrees remain open to them. The required core for the M.A. degree does not prepare a student for the second year of study in the Ph.D. program.
The Department also offers a joint M.A.-J.D. program. In this program the Department of Economics accepts up to nine semester hours in law to apply to the M.A. degree and the College of Law accepts coursework in economics to apply toward the law degree.

There are four distinct areas of requirements to be satisfied for the M.A.:

**Theory**
- 6E:201 National Income Analysis 3 s.h.
- 6E:202 Price Theory 3 s.h.

**History**
- 6E:207 History of Economic Thought I 3 s.h.
- 6E:207N Economic Development of the North American Economy 3 s.h.

**Quantitative Economics**
- 6E:181 Quantitative Methods 2 s.h.
- 6E:182 Introduction to Econometrics 3 s.h.

**Field**
- Three electives 3 s.h., each 1 s.h.
- or
- Four electives 5 s.h., each 1 s.h.
- Two seminars and papers 3 s.h. each

The program requires a total of 30 semester hours and a thesis, or 36 hours in the non-thesis 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 an oral examination over that material.

**Doctor of Philosophy**

The Ph.D. program has three components: a coordinated sequence of core courses, a set of major area courses and the writing of a dissertation. It is designed to bring students to a high level of technical competence through the core sequence and then to allow them, under faculty guidance, to design a specialized sequence of courses within their major areas. The core areas are microeconomic theory, macroeconomic theory, mathematical economics and econometrics. The core itself consists of ten courses designed to be taken in a specific sequence. The academic loads of nine to ten semester hours in this sequence presuppose that the student is employed as a research or teaching assistant. Those who are not so employed carry additional courses. The Graduate College requires 72 semester hours of graduate credit for a Ph.D.

The Ph.D. program has a minimum mathematics prerequisite of two semesters of calculus and one semester of linear algebra. This knowledge is presupposed throughout the graduate program. A written examination will be given at the beginning of the fall semester for the purpose of determining the level of mathematical competence of beginning students and to determine if the student could profit from additional work in any area.

**Ph.D. Core Sequence**

**First semester**
- 6E:200 Microeconomics I 3 s.h.
- 6E:211 Mathematical Economics I 3 s.h.
- 6E:200 Field Course 3 s.h.
- 6E:200 Topics in Economics 1 s.h.

**Second semester**
- 6E:204 Macroeconomics I 3 s.h.
- 6E:211 Mathematical Economics II 3 s.h.
- 225:120 Probability and Statistics 4 s.h.

**Third semester**
- 6E:205 Microeconomics II 3 s.h.
- 6E:221 Econometrics I 3 s.h.
- 6E:222 Field Course 3 s.h.

**Fourth semester**
- 6E:206 Macroeconomics II 3 s.h.
- 6E:222 Econometrics II 3 s.h.
- 6E:200 Field Course 3 s.h.

Students with aspirations toward a major in economics should take 225:153 Introduction to Mathematical Statistics I first semester and in their second semester replace 225:120 Probability and Statistics with 225:154 Introduction to Mathematical Statistics II.

**Major Area Courses**

Each student will choose a major area of study in addition to the core courses. Major areas offered by the Department include economic theory, mathematical economics, history of economic thought, economics, economic development, international economics, monetary theory, labor economics, health economics, economic history, industrial organization, economics of the government sector and regional and urban economics. A major area consists of a minimum of 21 semester hours of coursework consisting of intensive study of a field and additional courses which both supplement the major field and provide the student with sufficient breadth to understand the relationships between his or her own specialty and other related fields. The major area must include at least one course (3 semester hours) in either economic history or the history of economic thought.

The set of seven field courses chosen by each student must be approved by the faculty through the graduate director in consultation with the graduate advisory committee. The student must maintain a 3.2 grade-point average or better in the field courses. A student earning a low grade in a field course may repeat the course the next time it is offered and have the grade earned the second time replace his or her earlier grade for departmental purposes.

**Qualifying Examination**

The written qualifying examination covers economic theory, mathematical economics, and statistics. The purpose of the examination is to determine which students may continue for the Ph.D. degree and which students should complete an M.A. program.

**Comprehensive Core Examinations**

The written comprehensive core examinations cover economic theory and econometrics.
EE 223 Econometrics III 3 s.h.
Advanced econometric models: regression, nonparametric, survival, and censored data methods, time-series analysis, cross-sectional models, nonlinear models, functional form.

EE 237 Econometrics Development I 3 s.h.
Process of economic development and development economics; emphasis on theories of economic growth. Prerequisite: consent of instructor.

EE 238 Econometrics Development II 3 s.h.
Process of economic development and development economics; emphasis on policy alternatives in development. Prerequisite: consent of instructor.

EE 239 Econometrics Underdeveloped Regions Latin America 3 s.h.
Economic development in Latin America; emphasis on current issues and trends, and an approach to solutions. Prerequisite: consent of instructor.

EE 241 International Economics I 3 s.h.
Theory of interdependence; tariff theory and policy; trade and growth. Prerequisite: consent of instructor.

EE 242 International Economics II 3 s.h.
Theory of foreign exchange; balance of payments adjustments; assignment problem; exchange control; international investment. Prerequisite: EE 241 or consent of instructor.

EE 243 Monetary Theory I 3 s.h.
Microeconomics of money, classical monetary theory, money, money, and employment. Prerequisite: consent of instructor.

EE 244 Monetary Theory II 3 s.h.
Monetary theory of quantity theory, non-monetary and non-aggregate models of the price level; interaction between the monetary and real sectors; money in monetary growth. Review of empirical studies of monetary theory.

EE 251 Labor and Wage Determination I 3 s.h.
Economics of labor markets and evolving wage theory; models of industrial behavior; labor market: concepts, impacts of collective negotiations on employment outcomes on total economy; evaluation of alternative media.

EE 252 Comparative Labor Movements 3 s.h.
Global, growth and economic role of labor movements in selected industrial sectors: capital, Austria, Scandinavian countries, Russia, China, Canada, France, Italy and the United States; theory of labor movements. Prerequisite: consent of instructor.

EE 255 Health Economics 3 s.h.
Issues, trends, and implications in health care settings; economic incentives to promote health care; health economics in the United States; hospital administrative organization, and the free market system.

EE 260 Economic Development of the North American Economy 3 s.h.
Analysis of long-term growth patterns of North American economy with reference to specific theories of economic development; discussion of recent research on economic growth, migration, trade, transportation, innovation, technological change, and regional economies. Prerequisite: consent of instructor.

EE 261 Economic Development of the United States Economy 3 s.h.
Analysis of the growth and development of the United States economy. Emphasis on the causes of economic growth; major factors that influence economic growth; trends in the U.S. economy; and the role of government in economic growth. Prerequisite: consent of instructor.

EE 263 Industrial Development of Western Europe 3 s.h.
Societal development of the Western European economies; economic development and the European Community; economic development and the European Free Trade Area; economic development and the European Union. Prerequisite: consent of instructor.

EE 271 Industrial Organization I 3 s.h.
Introduction to theory of economic behavior (firm and sectoral structure); emphasis on current debates, market performance; and factors of industry structure. Prerequisite: consent of instructor.

EE 272 Industrial Organization II 3 s.h.
Public policy issues in industrial organizations; application and critique of antitrust laws; regulation of public utilities and transportation in U.S. Prerequisite: consent of instructor.

EE 275 Urban Growth in Developing Countries 3 s.h.
Analysis of the urbanization of Latin America and Latin America and the impact of urbanization on economic development. Prerequisites: EE 237, Soc 407, and Pol Sci 405.

EE 281 Econometrics of the Government Sector 3 s.h.

EE 282 Econometrics of the Government Sector 3 s.h.
Economic functions and effects on governing policy; economic functions of government; analysis of government policies, tax policies, and government expenditures; estimation of expenditure levels; budgetary policies; centralized vs. decentralized government; governmental fiscal and monetary policies. Prerequisites: consent of instructor.

EE 283 Federal Tax Policy 3 s.h.
Effects of specific actions on aggregate behavior and wealth distribution and economic activity; evaluation of proposals for change in federal tax system. Prerequisite: EE 284 or consent of instructor.

EE 284 State and Local Government Finance 3 s.h.
Economic functions of state and local government; problems and purposes of taxation, financial management, and governmental revenue policy. Prerequisite: EE 283.

EE 291 Regional Economics 3 s.h.
Regional development of economic theory, analysis, planning, and policy in regional economies; regional development and the regional economy; regional development and regional metropolitan areas; fiscal, economic, industrial, and social policies; regional development and regional economic development. Prerequisites: EE 237.

EE 292 Urban Economics 3 s.h.
Analytical synthesis of urban economics; emphasis on growth and economic growth in the economy; the impact of urban development on regional economies; a comprehensive analysis of the urban economy; urban economic development and urban economic development. Prerequisites: EE 237.

EE 293 Real Estate Economics 3 s.h.
Principles of property valuation and investment management. Prerequisite: consent of instructor.

EE 294 Urban Economics 3 s.h.
Principles of economic development. Prerequisite: consent of instructor.

EE 295 Urban Economics 3 s.h.
Principles of economic development. Prerequisite: EE 294.

EE 296 Urban Economics 3 s.h.
Principles of economic development. Prerequisite: EE 295.

EE 297 Urban Economics 3 s.h.
Principles of economic development. Prerequisite: EE 296.

EE 298 Urban Economics 3 s.h.
Principles of economic development. Prerequisite: EE 297.

EE 299 Urban Economics 3 s.h.
Principles of economic development. Prerequisite: EE 298.

EE 300 Real Estate Economics 3 s.h.
Principles of property valuation and investment management. Prerequisite: consent of instructor.

EE 301 Urban Economics 3 s.h.
Principles of economic development. Prerequisite: EE 300.

EE 302 Urban Economics 3 s.h.
Principles of economic development. Prerequisite: EE 301.

EE 303 Urban Economics 3 s.h.
Principles of economic development. Prerequisite: EE 302.

EE 304 Urban Economics 3 s.h.
Principles of economic development. Prerequisite: EE 303.

EE 305 Urban Economics 3 s.h.
Principles of economic development. Prerequisite: EE 304.

EE 306 Urban Economics 3 s.h.
Principles of economic development. Prerequisite: EE 305.

EE 307 Urban Economics 3 s.h.
Principles of economic development. Prerequisite: EE 306.

EE 308 Urban Economics 3 s.h.
Principles of economic development. Prerequisite: EE 307.

Advanced Graduate Seminars
Administrative Staff

Dean: James H. McIlwain
Associate Dean: Jess Veach, Jr.
Assistant Deans: C. Frederic Ede
                     W. W. Johnson
Coordinator, Student Affairs and
Director, Continuing Education: Ralph C. Applegate
Business Manager: M. J. Brennan
Manager of Patient Services: Nell Lusby

The College of Dentistry is built administratively and physically an integral part of the University. It drawn upon and contributes to the University's diverse resources, and its students enjoy all the advantages and privileges enjoyed by the general student body. The College benefits particularly from its cooperative relationship with the colleges of Medicine, Nursing and Pharmacy in the University Health Center, whose teaching, research and service activities have earned international recognition.

Basic Program in Dentistry

The basic educational program leading to the degree Doctor of Dental Surgery (D.D.S.) consists of three years of preprofessional study and four years of study in the College of Dentistry. The dental curriculum consists of five basic units:

- Basic Sciences
  - Gross and developmental anatomy; neuroanatomy, biochemistry;
  - general histology; physiology; gastrointestinal; oral pathology;
  - pharmacology; microbiology; clinical pathology; oral biology.

- Restorative Dental Sciences
  - Gums, microscopic and radiographic dental anatomy; dental materials; endodontics; operative dentistry; fixed partial prosthetics; removable prosthetics.

- Oral Medicine
  - Preventive Dentistry; oral diagnosis; dental radiology; osseous
  - and bone control; oral surgery; periodontology, therapeutics.

- Community Dentistry
  - Ethics, history of dentistry; epidemiology; nutrition; preventive,
  - community and community health; principles of human behavior;
  - dental economics; dental jurisprudence; practice management.

- Pediatric Dentistry
  - Facial growth and development; pedodontics and orthodontics.

To achieve a close correlation of the basic sciences with clinical disciplines, the student is introduced to actual clinical work during the first year.

The second-year 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 auxiliary utilization program.

Third-year dental students rotate through a series of "clinics" which give them meaningful exposure to each of the eight clinical disciplines.

Fourth-year dental students are involved in the delivery of comprehensive dental care in an environment which closely simulates conditions in private dental practice. Fourth-year students also are exposed to various extramural health programs at state and University Hospitals and the State Department of Health. There are available summer internship programs in which fourth-year dental and dental hygiene students assist in selected dental offices throughout Iowa. The preceptorships expose students to facets of dentistry usually not observable in an academic setting, such as practical business management procedures, appointment control, the dynamics of presenting treatment plans to private patients and development of the dentist in the community.

Special Programs

Flexibility

A dental student may satisfy departmental requirements by examination in lieu of course participation. The time thus gained may be used in progress through the curriculum at a faster rate. An accelerated program may consist of electives taken for credit, advanced clinical training, research or any combination of these activities.

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 teaching in any of the restorative dental sciences and may 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 accelerate its research activities, and facilitate the development of interdisciplinary communication in Health Center teaching, research and patient-care activities. The Health Center complex includes a new Basic Science Building, a new Health Sciences Library and a new Col-
lege of Nursing. The Health Sciences Library houses all of the University's special health collections, including the College of Pharmacy'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 consists of a separate building connected to a four-story wing located on either side of a mall. The south wing is devoted to clinical teaching, with various university clinical facilities, support laboratories, clinical research areas, offices, mechanical and electrical engineering laboratories, and other auxiliary area, and a modern production center and the program in community dentistry.

Promotions and Graduation

Student promotions and graduation are determined by the academic and professional performance committees appointed by the dean from each of the broad areas of basic sciences, preclinical sciences, clinical sciences, and from the other academic areas of the College. 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 or repeat specific courses, regardless of his or her grade-point average, when the student is deemed generally unprepared to be promoted or to enter the dental profession.

Committee for Appeals

When a student has been asked to withdraw from the College, or desires special consideration on problems concerning promotion or graduation, he or she may appeal to the dean in writing. The dean is authorized by the dean as the student's designated representative. The committee consists of such matters as student scholastic achievement, promotion, absence, and general fitness to enter the dental profession. The decision reached by the committee is final.

State Board of Dentistry License Examination

The states of Kansas, Colorado, Minnesota, Oklahoma, Iowa, Wisconsin, Nebraska, Minnesota, North Dakota, and South Dakota have been added to the examination of the Central Regional Dental Testing Service to replace clinical examination previously given by the states individually. These examinations are administered at various testing sites located at schools of dentistry within the region. Examination dates are determined by the Central Regional Dental Testing Service and are available from the institution. Successful completion of the requirements for the Central Regional Dental Testing Service will be accepted by the dental societies.

Expenses

The College of Dentistry maintains a Supply-Utilization-Inventory Management System (S.I.M.S.) that provides the student with a record of the instruments and supplies necessary throughout dental training. The instrument Usage fee for the program leading to the D.D.S. degree is $1,200. It may be paid in increments as the student progresses through the curriculum.

In addition, a fee for expendable laboratory supplies of approximately $200 will be charged for each of the first two years. A $100 breakage fee must also be deposited. The deposit 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 $3,500 each year of their undergraduate professional studies. Eligible students may also apply for federal scholarships. Preference is given to students who would not otherwise be able to finance health professional studies. Loans issued at low interest rates are repayable over an extended period of time after the recipient completes the course of study. There are also provisions for the reduction of interest on certain professional student loans made to students enrolled in schools of dentistry. A number of short-term loans are available from the American Dental Association, the Iowa Dental Association, the Kellogg Foundation, the Iowa Dental Achievement Fund, and other sources, to help students in emergency situations.

Dental students are also eligible for many of the assistance provided through the University's Office of Student Financial Aid. This includes opportunities for part-time employment.

For further information on financial assistance available to dental students, the "Scholarships and Loans" section of the catalog or inquiry at the Office of Student Financial Aid.

Student Organizations

All dental students are eligible for 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 Phi Omno, have chapter houses at Iowa, and both have wives' auxiliaries. There is also a Dental Student Wives Club.

Admission

Applications for admission to the College are accepted from July 15 through the end of 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 complete the 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

Each applicant must submit to the Office of Admissions the completed application form and official transcripts from all edu-
Legends: The basic academic requirement for admission to the College of Dentistry is the completion of no less than 94 semester hours of academic study at an accredited college.

Preclinical Studies
The potential program of study should include:

English
Satisfactory accomplishment in English composition and speech communication with the academic requirements for a bachelor's degree.

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 it still counts one-half of the credit must be for laboratory work.

Electives
The applicant should also have sufficient coursework in the social sciences, philosophy, psychology, history, foreign languages and mathematics to provide a well-rounded educational background.

The dental 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 94 semester hours of college work will be considered for admission if the applicant's performance and potential for the dental profession are considered outstanding. These candidates may be required to take the Graduates Record Examination Aptitude Test.

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 earns the College of Dentistry to obtain the bachelor's degree from the College of Liberal Arts upon successful completion of the twelfth year in dentistry. To take advantage of the 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.

Grade-Point Requirement
The applicant should have a cumulative grade-point average of at least 2.5 (x = 4). In addition to the cumulative grade-point average, the dental admissions committee gives special consideration in the quality of the applicant's coursework in the preclinical sciences.

Interviews
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 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. Applicants may obtain test application forms from the University or the American Dental Association. Test applications should be submitted well before the test deadline.

Deposit by Accepted Applicants
An accepted applicant must submit the required $50 deposit within 30 days after notification of favorable action on his or her application. This deposit is nonrefundable but is credited toward the first fee 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 Services prior to registration.

Advanced Standing
Applications for advanced standing are considered on the basis of their individual merit and availability of space in a given class.

Additional Admission Considerations
Preliminary to the specific requirements listed for admission does not ensure admission to the College of Dentistry. From the applicants meeting minimum admissions standards, the committee selects those who appear best qualified for the study and practice of dentistry. The committee considers applicants' academic averages, the scores on the required Dental Admission Test and several other factors.

Since the available places in the freshman class of the College of Dentistry are limited, preference will be given to applicants who are residents of Iowa under the University's regulations on residence. If it is found possible to consider a limited number of applicants who are not residents of Iowa, preference will be given to nonresident applicants having the highest scholastic standing.

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 Pres-
Basic Sciences In the Dental Curriculum
The following science courses are offered by departments in colleges other than Dentistry, and are a required part of the dental curriculum.

Monday: Human Gross Anatomy for Dental Students 6 a.h.
Lecture-laboratory approach in gross and microscopic; emphasis on head and neck. Graduate students must have credits of Department of Path. previous year.

Tuesday: Dental Microscopo Anatomy for Dental Students 4 a.h.
Cell, tissue, and organ study. This year.

Wednesday: Oral Microscopic Anatomy and Embryology 2 a.h.
Oral biology. Five year.

Thursday: Dental Microbiology 5 a.h.
Lecture, discussion, laboratory. Second year.

Friday: Principles of Human Pathology 4 a.h.
Self-studying programs, lectures, conferences, demonstrations, role-plays on principles of human disease. Second year.

Tuesday: Pharmacology for Dental Students 6 a.h.
Lectures, conferences, laboratory problem, pharmocologic actions and therapeutic role of drugs, emphasis on level of special interest in dentistry. Second year.

Wednesday: Pharmacology 6 a.h.
Lectures and laboratory; general principles and clinical treatment of various systems. First year.

Thursday: Biochemistry for Dental Students 4 a.h.
Chemical constituents and properties of living matter. The year.

Comprehensive Care
Division Head: Richard G. Gantner
Comprehensive care (family practice) is the capstone experience of the dental student’s training, in which his entire professional education is integrated and synthesized into a system of comprehensive and continuing dental health care management for the individual, the family, and the community. The goal of the Division of Comprehensive Care is to provide an environment in which the biologically oriented student may acquire the technical competence and health care management skills to reach a high level of professional maturity. The unique learning experiences are designed to develop the student to the need for a lifelong pursuit of personal and professional growth in order to accommodate the advancements in the health sciences and the changing environment of dental health care needs and delivery systems.

The Division of Comprehensive Care draws its faculty and its learning resources from a broad range of academic and professional practice experience. The ultra-modern facilities of the new Dental Science Building are designed to stimulate the spatial and operational environment of a model health care delivery system. Trained dental auxiliaries enrich the practice management and dental hygiene, utilization skills through the training in Expanded Auxiliary Management (TEAM) programs. Thus the facilties, the faculty, the auxiliaries, and the curriculum blend in comprehensive care to produce the optimum development of clinical competence and patient dental health care management.

Faculty Roster

1141 Comprehensive Care Lecturer 1 a.h.
Synthesis, review, and evaluation of prior acquired knowledge and experiences for an integrated, comprehensive system of dental health care management.

1142 Comprehensive Care Lecturer 1 a.h.
Continuation of 1141.

1141 Comprehensive Care Clinic 8 a.h.
Clinical application of prior acquired cognitive, psychomotor and affective learning experiences toward development of an integrated and comprehensive system of dental health care management.

1142 Comprehensive Care Clinic 8 a.h.
Continuation of 1141.

1142 Group Practice Seminar I 1 a.h.
Dynamics of principles of a model dental group practice with discussions of treatment program of patients assigned to the group; methods are explored and developed for encouraging the utilization and efficiency of all patient treatment by members of the group.

1142 Group Practice Seminar I 1 a.h.
Continuation of 1142.

1142 Specialties in General Practice I 1 a.h.
Goals selected from the various specialty sections provide specific techniques and guidelines in their area. Fulfillment of requirements for the general practitioner, discussion about selection of graduate specialty programs.

1142 Specialties in General Practice I 1 a.h.
Continuation of 1142.

1142 Diagnosis and Treatment Planning Seminar I 1 a.h.
Student familiarization with diagnostic procedures used in the development of a treatment plan and selection for selected dental problems; general approach to making an income treatment plan.

1142 Diagnosis and Treatment Planning Seminar I 1 a.h.
Continuation of 1142.

1142 Practice Management I 1 a.h.
Weekly lectures and seminars intended to assist the student in developing a sound philosophy of dental practice by examining professional ethics and personal goals; analysis of help and guide dental practice as well as indication of practice.

1142 Practice Management I 1 a.h.
Continuation of 1142.

1142 Practice Management I 1 a.h.
Weekly lectures and seminars providing financial and accounting systems needed to operate an effective and efficient practice, especially to develop business systems, appointment control and use of financial and legal consultants.

1142 Practice Management I 1 a.h.
Continuation of 1142.

1142 Practice Management I 1 a.h.
Weekly lectures and seminars providing financial and accounting systems needed to operate an effective and efficient practice, especially to develop business systems, appointment control and use of financial and legal consultants.

1142 Team Orientation I 1 a.h.
Lectures, conferences, and small group discussions designed to develop concepts and skills needed to manage dental hygiene area; special emphasis on auxiliary efficiency, interpersonal communication and personal management.

1141 TEAM Clinic II 1 a.h.
Clinical application of skills and concepts learned in 1141; student clinician manages a team of auxiliaries in a multi-chair clinic. Practicum: 111133.
Operative Dentistry and Endodontics

Courses
6:191 Occlusion
2 a.h.
Interdisciplinary instruction on concepts of occlusion and mandibular function.
6:175 Fixed Prosthodontics Technique
2 a.h.
Covers current techniques in fixed prosthodontics, including determination of materials used in construction of various types of metal and porcelain crown and bridge systems.
6:185 Fixed Prosthodontic Technique Laboratory
3 a.h.
Technical procedures required in construction of fixed prosthodontic structures.
6:192 Dental Materials and Prosthodontic Techniques
5 a.h.
Review of basic physical and clinical properties that apply to materials used in dentistry, relationship of atomic and molecular structure to physical and mechanical properties and applications in fabrication procedures. Same as Renova Dental Prosthodontic 5:101.
6:190 Fixed Prosthodontics
5 a.h.
Survey and critical analysis of research findings used in the fabrication of fixed partial dentures. Same as Renova Dental Prosthodontic 5:101.
6:192 Fixed Prosthodontics
5 a.h.
Survey and critical analysis of research findings used in the fabrication of fixed partial dentures. Same as Renova Dental Prosthodontic 5:101.

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 seminar 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 as well as in the basic sciences area is also required. Oral and written exams are given during the regular 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 three individuals who elect to terminate their program after one year, will be considered for issuing of certificates of attendance.

Each student will be required to submit a manuscript suitable for publication in a nationally-recognized professional journal, based upon the student's research and/or thesis topic. He or she will be required to prepare one additional manuscript for publication on another topic.

Admission
The minimum requirements for admission into the program correspond to the minimum requirements for admission to the Graduate College of the University. In addition, the student must hold a D.D.S. or M.D.M.D. degree or its foreign equivalent. No advanced G.R.E. is required.

Faculty Roster
Professors Thayer, Yoder, associate professor Syr, assistant professors Hove, Kouch.

Operative Dentistry and Endodontics
Department Head: Wayne W. Johnson
Degree offered: M.S.

Coursework for D.D.S. Students
Coursework in operative dentistry and endodontics is part of the total dental curriculum and is designed to be taken at specific times during the D.D.S. student's academic training. In endodontics the student studies pathological conditions of the dental pulp and the necessity to diagnose and treat these conditions in the patient's mouth.

In operative dentistry the student learns the methods and materials used to construct diseased and injured teeth in health, function and esthetics. After introductory courses in the laboratory, the student begins training in the patient clinics.
M.S. Program in Endodontics

The M.S. program in endodontics is designed to provide a level of training which will lead to a career in research, teaching and/or specialization in the clinical practice of endodontics. Applicants must be graduates of recognized dental schools, and foreign students must demonstrate proficiency in the use of English.

Unless the preparatory training of the candidate includes sufficient work in mathematics and chemistry, it will be necessary to complete these studies through differential calculus, statistics and quantitative analysis before undertaking a research project. Completion of the program will usually entail two calendar years of full-time effort. The applicant must be financially prepared to pursue studies without interruption.

In compliance with basic Graduate College regulations for programs in dentistry, these degree requirements must be met:

- Satisfactory completion of at least 60 semester hours of graduate-level courses, as follows:
  - 20 semester hours in clinical endodontics;
  - 10 semester hours of selected courses offered by the departments of the College of Dentistry;
  - 20 semester hours in basic sciences, such as biochemistry, physiology, microbiology or immunology;
  - 10 semester hours in the contributing areas of histology and anatomy, microbiology, statistics and analytical chemistry.

- Preparation of an acceptable thesis based on original research; not more than eight semester hours of research credit and eight semester hours of thesis preparation credit may be counted in satisfying the 60-semester-hour minimum for the degree.

- Satisfactory performance in a comprehensive written and/or oral examination which is of a functional character and does not duplicate similar examinations.

The director of the degree program will act as the student’s advisor and as chairman of the examining committee.

M.S. Program in Operative Dentistry

The M.S. program in operative dentistry is designed to prepare the student for a career in teaching and research. Since operative dentistry is not a specialty area of dentistry, course arrangement of the graduate program can be quite flexible. The student has considerable freedom to pursue courses of advanced study of particular personal interest. Excellent courses of study have been arranged in the biological sciences, material sciences and education.

An applicant for this program must be a graduate of a recognized school of dentistry and must comply with the requirements for admission to the Graduate College of the University.

An interview with the applicant may be required.

In addition to Graduate College requirements for advanced degree programs, these departmental requirements must be met:

- Satisfactory completion of 48 semester hours of graduate-level courses. These may be distributed as follows:
  - 20 semester hours of graduate-level courses in the College of Dentistry (may include 10 hours of clinical dentistry and practice teaching);
  - 20 semester hours of graduate-level courses in other areas of the University (should include courses in statistics and education), and
  - eight semester hours in original research and thesis preparation.

- Preparation of an acceptable thesis based on original research. The student should plan to furnish his or her own financial support for the research and thesis.

- Formal defense of the thesis and examination of the candidate by all examining committees. The director of the degree program will act as advisor to the student and as chairman of the examining committee.

Program in Teacher Education

A teacher training program is offered to graduate students anticipating careers in dental education. Students in this program pursue a plan of study combining courses in the College of Education, with departmental offerings in the College of Dentistry, Faculty with educational technology backgrounds aid in developing the plan of study. Research advisement is available for applied teaching problems for thesis requirements.

Faculty Roster

Professors Boisvieux (director, Endodontics); Johnson (director, Operative Dentistry); professor emphasis Wick; associate professors Chen, Demet, Khawass; assistant professors Faller, Kheter; instructors Haghe, Torrey, Elison; teacher education staff; professor Klopfi; assistant professors Logan, Tafii.

Courses

Endodontics

8130 Endodontics 2 a.h.
Learning, writing and laboratory projects designed to give understanding of basic principles, research and technical procedures necessary for treatment of pulpal and periapical tissues.

8116 Clinical Endodontic Practice 1 a.h.
Clinical operative practice; clinic programs evaluated; discussion of treatment of each individual case followed by student’s practical application on simple clinical cases. Primarily for Graduates.

Endodontic Literature Review 1 a.h.
Assigned reading and analysis of articles on current and future trends. May be repeated.

Research in Endodontics 4 a.h.
Required of all students working toward advanced degree. May be taken after third academic year. This course may be repeated.

Seminars in Endodontics 1 a.h.
Survey discussion of topics and current literature in endodontics; may include a number of guest lectures from specific subject matter. Specific assignments reviewed and reported upon by student.

Practice Teaching Endodontics 1 a.h.
Students assisting in case of dental students; assigned teaching obligation by adviser. Prerequisite: Education 73121.

Thesis Preparation in Endodontics 4 a.h.
Prepares for publication seminal article on assigned research project, with graphic illustrations, charts, photographs.

Advisory Endodontics 2 a.h.
Advanced topics in endodontic research and clinical procedures. Preparation 8130, or similar course taught in other dental colleges.

Advanced Clinical Endodontics 2 a.h.
Clinical demonstrations in assigned surgical and nonsurgical endodontic cases.
Operative Dentistry
First Year

82.02 Dental Anatomy Lectures 2 a.h.
Lectures and laboratory exercises on anatomy. Study of the teeth, the oral cavity, facial anesthesia and occlusion of human primary and permanent dentition.

82.03 Dental Anatomy Laboratory 4 a.h.
Detailed study of oral and maxillofacial anatomy and function utilizing replacement models and natural skull.

82.04 Operative Dentistry 2 a.h.
Lectures and seminars concerning dental materials, principles and design of cavity preparations, manipulation and placement of restorations; use of instruments in procedures pertaining to operative dentistry.

82.05 Operative Dentistry Laboratory 4 a.h.
Study and application of principles involved in preparation of human teeth for direct and indirect operative treatment. Includes study of dental materials and fabrication of restorations.

82.10 Dental Therapeutics for Dental Hygienists 2 a.h.
Survey of drugs used in dentistry, pharmacological design.

Primary for Graduates

May be taken any semester with permission of Department head.

82.200 Operative Dentistry Literature Review 2 a.h.
Assigned reading and preparation of papers.

82.201 Operative Dentistry Technical Methods 4 a.h.
Advanced review of clinical procedures; student studies and performs specific techniques.

82.203 Clinical Demonstration in Operative Dentistry 2 a.h.
Assigned reviews in operative techniques completed under the demonstration.

82.204 Research in Operative Dentistry 2 a.h.
Preparation for publication of original articles on assigned research project, with oral presentation.

82.205 Seminar in Operative Dentistry 2 a.h.
Conferences and discussion of current literature.

82.405 Practicum Teaching in Operative Dentistry 2 a.h.
Supervised practicum in teaching assigned teaching obligations by advisor: Prosthodontics; Education 71.231.

82.406 Thesis Preparation in Operative Dentistry 4 a.h.
Preparation for research on assigned research project, with oral presentation.

82.100 Operative Dentistry Lab (Hygiene) 2 a.h.
Basic laboratory study of principles involved in preparation of human teeth for direct and indirect operative treatment; practice of dental hygiene students Prereq: Class I, II, III and V clinical students with permission of instructor in laboratory.

82.101 Operative Dentistry Lab (Hygiene) 2 a.h.
Lectures, exercises, clinical demonstrations and supervised patient investigations for dental hygiene students in dental hygiene program; students perform all phases of operative treatment for hygiene patients and gain understanding of biological and surgical importance of operative treatment in periodontics.

82.102 Clinical Operative Dentistry (Hygiene) 2 a.h.
Clinical problems of patients treated in the laboratory. Students perform all phases of operative treatment on hygiene patients; gain understanding of periodontic problems encountered, and the surgical and medical importance of operative treatment in patients. Prereq: completion of course in dental hygiene.

82.207 Advanced Dental Therapeutics 2 a.h.
Study of pharmacology and application of drugs used in dentistry.

Teacher Education

May be taken any semester with permission of Department head.

82.209 Design and Evaluation of Teaching Techniques in Dental Education 2 a.h.
Opportunity to study research process on a meaningful sequence involving practical problem solving for dental educational research. Prereq: Independent studies.

82.204 Oral Biology
Art.

Oral Biology

Department Head: Klaus Nishi

Throughout coursework and research opportunities, the Department of Oral Biology offers exposure to the densely related bio sciences, with special emphasis on correlation between the basic science instruction provided by the College of Medicine and in clinical dentistry. Candidates for the D.D.S. degree complete four semester hours of oral biology which half must be in Oral Biology 93:100 or Oral Biology 93:102. A choice of min courses is also offered for D.D.S. candidates as well as graduates. The contents of these courses vary from time to time, according to student demand.

At the graduate level, the Department of Oral Biology offers coursework, guidance and facilities for research related to the structure and function of skin, oral mucous and periodontal as well as to the calcified structures of the oral cavity.

Special Programs

The Department offers coursework and research training to graduate students enrolled in M.S. and Ph.D programs in the various clinical specialty departments of the College as well as collaborative supervision for students enrolled in Ph.D. programs in the basic sciences.

Special Facilities

The Oral Biology Department is housed in the new (1973) Dental Science Building, and, in conjunction with the laboratories for histology/histocytology, ultrastructure, microbiology, neurophysiology and biochemistry, is able to offer a wide choice of research experience. Major equipment includes an image analyzing computer for quantitative histological investigations, a laboratory equipped for ultramicroscopic investigations, an intravital animal microscope, two transmission electron microscopes, and an electron microscope with scanning electron micro- scope facilities.

Special Faculty Strengths

The majority of the faculty of the Department have either the D.D.S. or M.D. degree, as well as the Ph.D., and have received special recognition through awards of special support, election of fellows and/or editorial boards of professional societies, and appointment to review groups of the National Institutes of Health and the National Science Foundation. Many Department members have joint appointments with basic science departments, the clinical departments of the College of Dentistry or the research and clinical departments of the Veterans Administration Hospital.

Faculty Rotator

Professor Henry Nishi; Nuki; associate professors Mackay; assistant professors Birger, Hill, Searle; adjunct professors Horen- becka, Neubauer; instructors Glick; research associate Himm-
Degree Requirements
All candidates for the Master of Science degree in oral diagnosis are required to pursue a course meeting the minimum requirements of the Graduate College. The candidate is expected to develop substantial ability in research in his or her selected field of endeavor, and this area of research must be applicable to the general field of oral diagnosis. Minimum requirements for the completion of the thesis are 24 months of work in a full-time graduate program enrollment. This will include a minimum of 40 semester hours of acceptable graduate credit in courses outlined by the staff in 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 (see "Graduate College").

Admission Requirements
The size of the Department staff and facilities limits the number of applicants who may be accepted for the Master of Science degree program. It is therefore necessary that each prospective applicant demand the opportunity for enrollment with the departmental executive before applying for admission to the Graduate College. The minimum requirements for admission to this program are those of the Graduate College. The final decision on acceptance of any applicant meeting minimum requirements will rest with the staff in oral diagnosis.

Faculty Roster
Associate Professor Hammer; assistant professor Eske, butter, Ludlitz; assistant adjunct professor Bödtler, Menton, Hock; instructors Sippy; adjunct instructors Heiland, Jones, Kielche, Wilson.

Courses
Admissions Courses
65:107 Ethics and Practice Management I
1 s.h.
65:108 Practice Management II
1 s.h.
65:109 Clinical Emergencies
1 s.h.
65:110 Clinical Examinations: Dental
1 s.h.
Dental Radiology Courses

85.6 Dental Radiology for Dental Hygiene Students 1.5 h.
Lectures and instruction on roentgenographic techniques, radiation hygiene, film processing, and mounting. First year.

85.6 Clinical Dental Radiology for Dental Hygiene Students 1.5 h.
Supervised clinical experience in taking dental radiographs, processing and mounting films. Second year.

86.102 Dental Radiology 1.5 h.
Fundamental principles and techniques of panoramic and occlusal radiography, concept and interpretation of panoramic and panoramic projection. Third year.

87.106 Clinical Dental Radiology 1.5 h.
Supervised experience in taking and processing intraoral and extraoral radiographs and principles of radiographic interpretation. Third year.

87.11 Advanced Clinical Dental Radiology 1.5 h.
Supervised clinical experience in taking and interpreting intraoral and extraoral radiographs. Fourth year.

Primarily for Graduates

86.208 Dental Radiology Literature Review 1 cr.
Selected reading and preparation of abstracts.

86.307 Seminar: Dental Radiology 1 cr.
Basic concepts of radiologic physics, recording media, radiation hygiene and radiation protection; principles and procedures in techniques and interpretation in standard and special procedures; Protec tive coat of materials.

86.308 Research: Dental Radiology 1 cr.

86.309 Practical Teaching: Dental Radiology 1 cr.
Observation and practice in current teaching procedures.

86.507cb The Oral Radiology 1 cr.

Oral Diagnosis

87.304 Oral Diagnosis and Treatment Planning 2 cr.
Principles used in examining the oral cavity, comparison between oral and systemic conditions, use of diagnostic aids, interpretation of diagnostic data to plans of care, development of treatment plans. First year.

88.110 Clinical Oral Diagnosis 2 cr.
Practical application of diagnosis and extraction planning for patients. First year.

89.211 Biostatistics 1 cr.
Introduction to clinical care presentation for staff conference research. Fourth year.

Primarily for Graduates

86.505c Diagnosis: Literature Review 1 cr.
Selected reading and preparation of abstracts.

86.504c Survey: Oral Diagnosis 1 cr.
Principles and procedures in diagnosis of oral diseases and their etiology; use of laboratory data in differential diagnosis.

86.505c Research: Oral Diagnosis 1 cr.

86.504c Practical Teaching: Oral Diagnosis 1 cr.

86.505c Thesis Preparation: Oral Diagnosis 1 cr.
May be taken during any semester. (With permission of Department head.

Oral Pathology

Acting Department Head: William H. Tade
Degree offered: M.S.

The major objectives of the Department of Oral Pathology are basic instruction of dental 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 in dental school graduate clinical training in preparation for specialized practice of oral pathology. The program leading to a Master of Science degree is longer and more comprehensive, including research training. The laboratory diagnostic services, which the Department of Oral Pathology provides for the clinics of the College of Dentistry, contribute extensively in all phases of the departmental educational effort. The laboratories are well equipped for work in histopathology, bacteriology, and selected procedures in clinical chemistry. Special facilities for studies in experimental pathology are used mainly for graduate student and staff research.

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. Qualification for the certificate includes 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 Department of Oral Pathology.

The required courses for this program are:

85.304 Oral Pathology 4 h.
89.201 General Pathology for Medical Students 4 h.
89.202 Systemic Pathology for Medical Students 7 h.
88.109 Basic Cytology/Anatomy 4 h.
85.206 Advanced Oral Pathology 4 h.
85.207 Advanced Clinical Pathology 8 h.
85.105 Topics in Oral Pathology 2 h.
99.200 Clinical Biochemistry 3 h.
27.111 Introduction to Microscopic Techniques 4 h.

Additional courses may be elected if circumstances permit.

Master of Science Degree with Thesis

Candidates for the Master of Science degree are expected to develop substantial ability as do research into the mechanisms of oral disease and should demonstrate that considerable effort will be devoted to completion of an assigned research project and the thesis.

The tools for research will be determined for each student after consultation with the major advisor, but all must successfully complete a course in statistical methods applicable to biological research. Minimum requirements for completion of this program are 36 months of full-time work and satisfactory completion of required courses.

The required courses are:

86.201 General Pathology for Medical Students 4 h.
89.202 Systemic Pathology for Medical Students 7 h.
85.204 Oral Pathology 4 h.
37.211 Cytology Seminar 2 h.
37.28 Fundamental Genetics 3 h.
68.200 Basic Cytology/Anatomy 4 h.
11.212 Statistical Methods in the Biomedical Sciences 3 h.
37:111 Introduction to Microscopic Techniques 4 s.h.
37:200 Clinical Biochemistry 3 s.h.
61:165 Clinical Laboratory Microbiology 3 s.h.
85:206 Advanced Oral Pathology 6 s.h.
85:251 Topics in Oral Pathology 2 s.h.
85:207 Advanced Clinical Pathology 8 s.h.
85:208 Research in Oral Pathology 10 s.h.

Since most graduates of advanced programs in oral pathology follow academic careers, students will participate in undergraduate teaching in the Department of Oral Pathology as part of their training.

Evaluation of the qualifications of candidates for the Master of Science degree and the Certificate in Oral Pathology will be determined by final comprehensive oral examination in accordance with the rules of the Graduate College. The examination committee will be composed of members of the graduate faculty from the Department of Oral Pathology and at least two additional members of the graduate faculty representing the sciences other than pathology which contributed the most to the thesis. The examination will relate in the candidate's knowledge of basic pathological processes and to the thesis. It will also cover the practice of oral pathology if the candidate is to be considered for the Certificate in Oral Pathology.

Admission Requirements
The size of the Departmental staff limits the number of applicants who can be accepted for programs leading to the Certificate in Oral Pathology and the Master of Science degree. Therefore, it is necessary that each prospective applicant for advanced training discuss the 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 2.70 and satisfactory scores in the Graduate Record Examination: Aptitude Test and in the Advanced Test on either Biology or Chemistry. Final decisions on acceptance of any applicant meeting the minimum requirements for admission will rest with the departmental staff.

Facilities
The laboratories of the Department of Oral Pathology are equipped for training in histopathology, laboratory diagnosis pertaining to odontology, and experimental pathology. Laboratories are available for investigation of ultrastructure of both soft and calcified tissues.

Faculty Roster
Professor Tate; professor Emeritus Fisher; associate professors Hammond, Shallo.

Courses
85:011 Oral Pathology for Dental Hygienists 3 s.h.
50:011 Development of informed awareness of clinical trituraires between normal and pathological oral tissues and general understanding of principles basic to the oral tissues involved in significant diseases of the mouth; subject matter includes caries, degenerations, neoplasms, neoplastic growth behavior, developmental aberrations, cysts, tumors, periodontics and dental caries.
85:012 Oral Histology 4 s.h.

Oral Surgery
Division Chairman: Donald B. Osborne
Degree offered: M.S.

Residency Program
The aim of the residency program in oral surgery is to provide preparation for specialty practice. The program is designed to prepare clinical and surgical training on an individual basis. Every effort is made to adapt the program to the individual's 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 structural frame of the program. Requirements for the Master of Science degree may be completed during residency. The M.S. program comprises of a three-year course of integrated didactic and clinical study, and may include a research project and the preparation of a thesis. The University of Iowa College of Dentistry has outstanding basic and clinical science 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 clinics of Dentistry and Medicine provide an appropriate environment for residency training in oral surgery.

Residency
The residency period covers three years 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 resident takes advanced coursework in such subjects as applied pharmacology, surgical anatomy, pathology, physiology and microbiology, and reviews such closely-related disciplines as roentgenology, anesthesiology, physical diagnosis and laboratory procedures.

The assignment of increased responsibility and the opportunity for clinical and operating room experience are important aspects of residency training.

The resident gains clinical training in anesthesiology through an assigned rotation in the Department of Anesthesiology. Previous advanced training in physical diagnosis, physiology, pharmacology and pathology now assumes greater clinical significance. Increased responsibility in the operating room as first assistant and surgeon further develops surgical judgment and skills.

The development and implementation of a research project under staff supervision enhances the value of the residency training.

The senior resident may be given responsibility for major oral surgical cases during exposures in the University and VA hospitals. Each third-year resident is assigned on a rotational basis as a clinical and didactic coordinator and assumes responsibility to qualify for examination by the American Board of Oral Surgeons.

Faculty Roster

Professors O'Brien, Huls, McLeans; associate professor Hig; assistant professors Davis, Lenox, Wolfson.

Undergraduate Program

The purpose of the undergraduate program in orthodontics is to enable the general practitioner of dentistry to recognize, diagnose and treat with competence simple malocclusions of the teeth.

Lecture courses guide the student in the learning of basic concepts of dental and facial growth, as well as treatment-oriented subject matter. In a laboratory course, diagnostic records are taken and evaluated and treatment appliances are fabricated. A volunteer program of clinical treatment of selected patients is supervised by the Department.

Opportunities exist for research and independent study in the Department.

Graduate Program

The purpose of the graduate program in orthodontics is to educate specialists capable of diagnosing and treating with skill any malocclusions of the teeth requiring comprehensive care. The specialist should be familiar with and be able to critically analyze biologic, biomechanic, diagnostic and treatment concepts in orthodontics. The majority of graduating specialists are self-employed in urban communities; a few are employed by the government and in education.

Satisfactory completion of a 34-month period of intensive study, including lecture courses, seminars, clinical practice and a research paper, qualifies a student for the Certificate of Orthodontics. If a student satisfactorily completes a thesis based on an original research project, he or she will qualify for the M.S. degree in addition to the Certificate of Orthodontics.

Opportunities are available for research and independent study in the Department.

Admission requires the D.D.S. degree, or its equivalent, and satisfaction of Graduate College requirements.

Special facilities for research in biochemistry and craniofacial growth are available. Interaction with other departments provides learning and research opportunities in surgical orthodontics, cleft lip and palate repair, speech pathology, animal experimentation and human growth.

Faculty Roster

Professors Andrews, Jacobs, Kamanouk, Olins; associate professors Bishara, Bailey; assistant professor O'Meara; associate associate professor DeKock; assistant assistant professor Hanneman, Thorner.
Courses

89:101 Orthodontic Laboratory 1 a.h.
Practical experience in taking and analyzing orthodontic diagnostic records, developing treatment plans, constructing appliances.

89:102 Craniofacial Growth 2 a.h.
Incorporates in various courses of craniofacial biology basic to orthodontic diagnosis and the philosophy of management of orthodontic problems; topics include development of dentition, physiology of a neurosensory system, neuropsychological considerations, growth and development, genetic variability in the face and mouth, growth of the cranium and facial structures.

89:130 Orthodontic Diagnosis 1 a.h.
Normal dental occlusion and facial patterns associated with anomalies and facial patterns in malocclusion; etiology of malocclusion; interpretation of diagnostic records; treatment planning after orthodontic treatment.

89:134 Orthodontic Treatment 1 a.h.
Ranges from patient motivation to the use of different appliances to correct some of the malocclusions the general practitioner can handle in his office.

89:146 Delivery of Orthodontic Services by the General Practitioner 1 a.h.
The following topics are covered by assigned class work and written assignments: removable and non-removable appliances and equipment needed in the general practitioner’s office; treatment cases illustrating types of malocclusions which should be treated in the orthodontic office, longitudinal case studies of adult orthodontic cases before and after treatment; literature reviews (e.g., reviews and studies), from diagnosis through follow-up records of from three to seven years, interocclusal vs. fixed appliance; primary sources and clinical reports of adult cases; side effects interest in orthodontics; adverse treatment caused by incompetent practitioners; emphasis on the patient’s role in the successful treatment of orthodontics; importance and variation of residence for a stable occlusion; problems in treating pre-adolescent patients; effective orthodontic care for patients.

89:156 Orthodontic Clinic 2 a.h.
Clinical experience in orthodontic diagnosis, treatment planning and treatment; selected patients with malocclusions appropriate for undergraduate treatment will be seen. Diagnosis and treatment conducted under guidance of orthodontic graduate student and staff members; may start during winter term of junior year, may be continued during fall of senior year, when senior student must follow patient film; clinical records on completion of treatment, patient must honor all obligations to patient, which include appointments during summer months.

89:157 Advanced Orthodontic Concepts 1 a.h.
Topics include non-orthodontic treatment concepts in various areas of oral and maxillofacial surgery.

89:158 Special Orthodontic Projects 1 a.h.
Undergraduate research project designed to give student an opportunity to learn scientific methodology in preparation for a possible dissertation of research.

For Graduate Students

89:250 Control Theory and Craniofacial Neurophysiology 1 a.h.
To broaden students’ general biological perspective, analyzing what is now considered a normal system theory control theory - psychophysics, systems analysis, develop sense of perspective about role of applied behavioral biology, provide information about areas of human biology on a scientific level.

89:261 Orthodontic Theory: Diagnosis and Treatment 1 a.h.
Seminar in orthodontic theory.

89:262 Orthodontic Diagnosis and Treatment Planning 2 a.h.
Advanced concepts in orthodontic diagnosis are presented. Orthodontic diagnosis and treatment planning in the normal dental arch are covered. Orthodontic diagnosis and treatment planning in the normal dental arch are covered.

89:263 Advanced Orthodontic Technique 2 a.h.
Various techniques in orthodontic treatment of special types of malocclusions are discussed. Orthodontic diagnosis and treatment planning in the normal dental arch are covered.

89:264 Orthodontic Research 1 a.h.
A survey of various courses of craniofacial biology basic to orthodontic diagnosis and the philosophy of management of orthodontic problems; topics include development of dentition, physiology of the neurosensory system, neuropsychological considerations, growth and development, genetic variability in the face and mouth, growth of the cranium and facial structures.

89:265 Facial and Dental Growth 2 a.h.
Utilization of second concepts of facial growth in the treatment of individuals with various types of malocclusions during their active growth period.

89:267 Case Analysis 1 a.h.
Advance reading in diagnosis and treatment of special cases; exposure to present two case histories of patients treated by selected orthodontic procedures.

89:299 Orthodontic Practicum 1 a.h.
Clinical in-office on the job.

89:210 Orthodontic Seminar 1 a.h.
Evaluation, discussion, review of defense of different treatment approaches in orthodontics cases which need, case undergoing or have completed orthodontic treatment.

89:211 Problems: Orthodontics 1 a.h.

89:212 Research in Orthodontics 1 a.h.

89:214 Research Methodology 1 a.h.
Topics include formulation of problems; methodology: research design; methods of data collection; interpretation of quantitative data; methods of graphic presentation. Orthodontists need to be familiar with the techniques used in the design of new methods of orthodontic research and the interpretation of their results.

89:216 Careful Observation 1 a.h.
Evaluation and selection of patients for orthodontic practice; review problems from selected case histories of orthodontic practice.

89:217 Correspondence 1 a.h.
Evaluation and selection of patients for orthodontic practice; review problems from selected case histories of orthodontic practice.

89:220 Scientific Writing 1 a.h.
Resumés concerning unsung, singular people reversion at a number of subjects as an orthodontist.

89:221 Current Orthodontic Concepts 1 a.h.
Evaluation and selection of patients for orthodontic practice; review problems from selected case histories of orthodontic practice.

89:225 Craniofacial Anatomy 1 a.h.

Pedodontics

Department Head: P. M. Parkkka
Degree offered: B.S. (Thomson student 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.

Graduates in Pedodontics leads to either a certificate or master’s degree. The program is fully accredited by the Council on Dental Education. Special support is available to qualified students. Applications are submitted to the Graduate College. The title derived to the course of graduate study is divided into an approximate 50 percent advanced clinical activity, 40 percent didactic courses and 20 percent original research.

A core of clinical and basic science courses is supplemented by elective selections following the student’s individual interests. The choice of a minor subject area is recommended.
Close association with the Department of Pediatrics, the University Hospital School and the University Hospital permits emphasis on oral rehabilitative under general anesthesia, instruction in physical diagnosis and the management of exceptional children.

Dual degree programs have been arranged with several other departments. The research carried out by graduate students has been selected on a number of occasions for national awards and journal publications.

Graduate students are trained in all phases of periodontics in order to permit career choices in practice, education or research. Special emphasis is placed on preparation for the American Board of Periodontics examinations.

Clinical and laboratory research projects are in progress, with financial support from federal agencies and other sources. Significant contributions have been made in the areas of fluoride action and child behavior management.

Faculty members hold appointments at national and state offices, committees memberships, consultations and honors. They serve as reviewers for several professional journals and federal granting agencies. They also participate regularly in continuing education programs for dentists and other health science personnel.

Faculty Roster

Professors: Parks, Hayzen; associate professors: Fuhr, Karlsson, Nowak, Wei; assistant professors: Walsh, Piskam; instructor: Wasiri.

Courses

95-101 Periodontal Diagnosis and Treatment 2 c.h.

95-102 Periodontal Techniques 1 c.h.

95-104 Clinical Periodontics 2 c.h.

Primary for Graduates

95-200 Periodontal Literature Review I 3 c.h.

95-201 Periodontal Literature Review II 3 c.h.

95-202 Periodontal Literature Review III 3 c.h.

95-203 Periodontal Literature Review IV 3 c.h.

95-204 Advanced Clinical Periodontics 3 c.h.

95-205 Research Periodontics 3 c.h.

95-206 Practice Teaching Periodontics 3 c.h.

95-207 Thesis Preparation 3 c.h.

95-208 Introduction to Advanced Periodontics 3 c.h.

95-209 Pediatric Therapy 1 c.h.

95-210 Headache of Children 1 c.h.

95-211 Periodontics of the Adult 1 c.h.

95-212 Periodontal Hospital Rehabilitation I 3 c.h.

95-213 Periodontal Hospital Rehabilitation II 3 c.h.

Periodontology

Department Head: C. M. Foleigh

Graduate Courses: M.B. (clinical training or certification also offered)

Master of Science Program

The Master of Science program is designed primarily to provide training for research, teaching and specialization in the clinical practice of periodontics. It is directed at the prevention and treatment of disease of the supporting structures of the teeth.

The applicant must be a graduate of a recognized dental school. Unless the candidate's predoctoral 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 34 calendar months of full-time effort. The applicant must be financially prepared to undertake uninterrupted prospective studies. Qualified persons may apply for postdoctoral fellowships from the National Institutes of Health or the National Science Foundation. 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 regulations must be met:

• Satisfactory completion of a minimum of 60 semester hours of all graduate-level courses, to be divided as follows:
  34 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, and 13 semester hours in the contributing areas of microanatomy, mathematics, statistics and analytical chemistry.

• Preparation of an acceptable thesis based on original research (not more than 12 semester hours of research credit and six 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 adviser and examining committee chairman.
Certification Program
This program is designed to meet all requirements of the American Board of Periodontology for eligibility for certification. The program provides a sound foundation for the clinical practice of periodontics.

Accepted students register in the Graduate College. Upon satisfactory completion of 45 semester hours of coursework in periodontology and related fields, (clinical or basic research is encouraged but is not mandatory), they receive the certificate from the College of Dentistry.

Admission requirements are a 2.5 grade-point average (A = 4) or above, two letters of recommendation, and a D.O.S. or D.M.D. degree or equivalent.

Faculty Roster
Professor Pelcig; associate professors Orsagh, Lainos, Rubright, Sabesin; assistant professors Collins, Hill; assistant associate professor Cooper.

Courses
92:14 Periodontic Methods 3 s.h.
Periodontic survey of etiology and methods of periodontal practice. 16 clock hours. Second year.
92:16 Periodontology
3 s.h.
Seminars; lectures and discussions of treatment plans. Third year.
92:19 Periodontics 3 s.h.
Demonstrations, clinical practice in diagnosis and treatment of periodontal disease. Third year.
92:110 Periodontology for Dental Hygienists 2 s.h.
Lecture, discussion and laboratory covering basic concepts of periodontal disease and treatment. Registration limited to junior dental hygiene students.
92:114 Clinical Periodontics for Senior Dental Hygienists 2 s.h.
Students 1 s.h.
Senior; clinical practice in diagnosis and treatment of periodontal disease. Registration limited.
92:118 Advanced Periodontics for Senior Dental Hygienists 5 s.h.
Students 1 5 s.h.
92:117 Advanced Periodontics for Senior Dental Hygienists 5 s.h.
Students 1 5 s.h.
Seminars; demonstrations and clinical practice in managing advanced inflammatory disease of tooth-supporting structures. Second semester.

Graduate Courses
92:201 Periodontology 3 s.h.
92:203 Seminar: Periodontology 3 s.h.
92:205 Periodontics 3 s.h.
92:206 Research: Periodontology 3 s.h.
92:208 Journal of Instruction in Periodontology 3 s.h.
92:208 Periodontology Literature Review 3 s.h.
92:208 Practice Teaching in Periodontology 3 s.h.
92:208 Recent Advances in Periodontology 3 s.h.
92:210 Periodontology Pathology Seminar 3 s.h.
92:212 Applied Oral Microbiology 3 s.h.
92:213 Basic Science Review 3 s.h.

Preventive and Community Dentistry
Diseases: W. Philip Pharm
Degree offered: D.B.
Programs in preventive and community dentistry are designed to provide dental students with experiences to increase their awareness of health needs and to encourage students to develop and implement approaches to alleviate these needs. Extramural programs provide students with opportunities to interact with health care teams and members of communities in Iowa.

Using the community as the classroom, students are able to observe and participate in a variety of activities intended to make the student aware of the societal obligations he or she must assume in order to practice effectively.

A recent addition to the Department's resources are two mobile dental vans, one with five operators and a second smaller unit designed for prevention programs. The vans are operated throughout Iowa, and give senior dental and dental hygiene students and graduate students an experience which closely simulates community dental practice.

Graduate Program
The Master of Science degree program is designed to prepare students in community dentistry, with emphasis on teaching, research or administration. The objective of the program is to help students achieve a high degree of professional competence in their respective areas of specialty interest. Successful graduates of this program will have met educational requirements necessary to establish their eligibility for the American Board of Dental Public Health.

The program requires 60 semester hours of coursework. The usual full-time program requires two full academic years plus one summer session.

Faculty Roster
Professor Pharm; associate professors Watsch; assistant professors Olson, Henderson, Sauls; instructors Zazen, Mosher, Affiliated staff: Goodrich, Steen, Henderson, Jellicoe, Welsh, Eas-

Course
111:101 Preventive Dentistry 3 s.h.
111:102 Community Dentistry 3 s.h.
111:104 Evaluation of Dental Scientific Literature 1 s.h.
111:105 Principles of Interpersonal Communication 3 s.h.
111:106 Introduction to Public Health at the National, State and Local Levels 1 s.h.
111:106 Principles of Interpersonal Communication 3 s.h.
Removable Prosthodontics

Acting Department Head: Forrest R. Scannapieco
Degree Awarded: D.D.S.

Removable prosthodontics is the specialty of dentistry involving complete dentures and removable partial dentures. The Master of Science degree prepares the specialist for a career in education and research. Also, the program satisfies the formal training requirements for eligibility for the American Board of Prosthodontics examination.

The requirements are flexible, permitting the development of a plan of study which will fill the individual needs of each student. This is possible since normally not more than two students are accepted each year for advanced training in the Department. Each student is required to prepare a thesis based on original research and pass an oral and/or written comprehensive examination. The student's advisor will serve as chairman of the examining committee. The student 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.

Minimum requirements for admission to the program correspond to the minimum requirements for admission to the Graduate College. In addition, the student must hold a B.D.S. or D.M.D. degree or its foreign equivalent. No advanced GIES is required.

Faculty Roster

Associate professor Miller; assistant professors Davidson, Fettinger, Scannapieco; instructors Ervin, Maxwell, Thompson. Affiliated staff: LaValle, Oshorn.

Courses

84/206 Removable Prosthodontic Technique Lecture 3 a.h.

Technical procedures in construction of complete and removable partial dentures.

84/106 Removable Prosthodontic Technique Laboratory 3 a.h.

Laboratory exercises in construction of complete and removable partial denture.

84/411 Dental Materials and Prosthodontic Techniques 5 a.h.

Theory and manipulation of dental materials with basic surfaces. Same as Dental Materials 411.

84/116 Removable Prosthodontia 3 a.h.

Fitting and clamping procedures; occlusion, diagnosis, progress and function in design and construction of complete and removable partial denture.

Primary for Graduates

84/2007 Literature Reviews: Prosthetic Dentistry 3 a.h.

Removable Prosthodontics 3 a.h.

84/2008 Removable Prosthodontia 3 a.h.

Assigned for students assigned copies assigned in sequence of suitability.

84/2035 Research: Removable Prosthodontia 3 a.h.

Research design and collection of data on selected research project.

84/2034 Seminar: Removable Prosthodontia 3 a.h.

Seminars and discussions of articles selected by students.

84/2036 Practice Teaching: Removable Prosthodontia 3 a.h.

Clinical and classroom teaching experience supervised by advisor.

84/2037 Thesis Preparation: Removable Prosthodontia 3 a.h.

Review of current literature.

*May be taken during any semester with permission of Department head.
Administrative Staff

Dean: Howard R. Jones
Assistant Deans: Edward B. Peterson, Laurence A. Van Dyke
Associate Deans: Stuart C. Gray, Owen L. Springer
Director, Iowa Testing Programs: William C. Coffman
Director, Iowa Center for Research in School Administration: Randall L. Miller
Director, Educational Planning: Judith D. Hendershot
Coordinator, Media Laboratory: Calvin E. Mather

Division Chairman

Educational Administration: Wayne A. Brown (acting)
Elementary Education: Jerry H. Olson
Educational Psychology, Measurement and Statistics: Paul Blossmer
Secondary Education: John E. Nelson
Counselor Education: Albert B. Hendricks
Special Education: Andrew Hafeman

General Information

Application

Although freshmen are admitted to the Teacher Education Program, students are not eligible to enroll in professional education courses before they have completed 28 semester hours. The Application for Admission to the Teacher Education Program should be filed with the Office of Admissions by May 15 preceding the academic year in which the applicant plans to enroll in professional education courses. Applications received after that date will be approved only if faculty and practicum resources permit.

Enrollment Limits

Faculty and teaching station limits may make it necessary to restrict enrollments in elementary education, special education and in social studies and English in secondary education. If the number of applicants exceed the capacity of a program, students are selected according to criteria established by the faculty.

Student Teaching

The final phase of the Teacher Education Programs is the professional semester devoted to supervised student teaching and directed observation in a variety of situations. Periodic seminars provide for discussion and evaluation of student teachers' experiences. Student teachers usually live in the communities in which they have their student teaching assignments. To register for student teaching, the student must have:

- Satisfactorily completed 8 semester hours during one academic semester in residence at The University of Iowa;
- Satisfactorily completed foundations courses, 7B-75 Educational Psychology and Measurement, 7E-101:1 operation of AV equipment (elementary) and 7E-100:1 introduction to secondary school teaching and 7E-31 or 75-91: pre-education practicum;
- Satisfactorily completed the appropriate methods courses;
- Maintained a cumulative grade point average of no less than 2.20 if an undergraduate student, 2.50 if a graduate student, 2.70 if an M.A.T. candidate on full time, and all college work attempted at the University of Iowa and all work attempted in his or her teaching major;
- Consulted with and been recommended by the appropriate advisor in education and the Director of Student Teaching.

Application for the student teaching assignment must be submitted by March 15 for the following year.

Waivers

Students who have completed practice-year experiences or courses which they feel should be considered in lieu of require-
meets should consult with their advisers concerning waiver process.

The CUTE Program
Students find they may better advance their educational interests through student teaching in an inner-city situation, and who are interested in working with inner-city youth, may apply for the Cooperative Urban Teacher Education (CUTE) program through the Director of Student Teaching. The program is a federal project sponsored by the Mid-Continent Regional Educational Laboratory, Iowa, is one of several midwestern institutions which place selected students in the Kansas City inner-city system. The program is open to any student who meets the requirements for student teaching.

State Requirements
Certification to teach in Iowa requires completion of a minimum of two semester hours in American history or American government. Survey courses in American history or 30.1 American Political System satisfy this requirement. The political science courses may also apply to the College of Liberal Arts social science core requirements.

G.P.A.
Records of all Teacher Education Program students are reviewed at the end of each semester, and those who have not maintained a 2.20 G.P.A. on all coursework attempted and on all University of Iowa coursework are dropped from the program. Students dropped may be readmitted when the required 2.20 G.P.A. is achieved.

Elementary and Early Childhood 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 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 this 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. Special sequences are also available for students seeking the nursery school-kindergarten endorsement and for those seeking approval for teaching in middle schools or junior high schools.

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 certification for elementary teaching and approval for 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.

Program Requirements
Foundations Courses
Undergraduates should complete those in their sophomore year. Graduate students may elect equivalent graduate-level courses with the approval of their advisers.

7E: 91 Pre-Teaching Practice or equivalent experience (must be taken concurrently with TE: 100)
7E: 100 Introduction: Elementary Teaching 2 s.h.
7E: 75 Educational Psychology and Measurement 3 s.h.
7E: 101 Operation of Audio-Visual Equipment 1 s.h.

Methods Sequence
The student is expected to complete these required courses during the two semesters and/or summer session preceding student teaching:
7E: 140 Methods: Elementary School Language Arts 3 s.h.
7E: 161 Methods: Elementary School Social Studies 3 s.h.
7E: 162 Methods: Elementary School Science 2 s.h.
7E: 163 Methods: Elementary School Mathematics 2 s.h.
7E: 164 Methods: Elementary School Reading 3 s.h.

Student Teaching
Students should make application to the College of Education by March 15 preceding the senior year. Students elect 7E: 91 Supervised Teaching in Elementary School or 7E: 192 Laboratory Practice in Elementary School; 7L: 191 Laboratory Practice in Education of the Physically Handicapped Child and 7E: 158 Supervised Teaching Early Childhood Center may also be elected where appropriate. The student teaching period is one full semester or for 15 semester hours of credit.

Areas of Specialization
An area of specialization is required in a teaching field.

The areas of specialization offered are elementary art, early childhood, elementary language arts, elementary mathematics, elementary music, elementary reading, elementary physical education (men's and women's), elementary science, elementary social science, special education and elementary generalist.

The student should consult with his or her adviser concerning courses which will serve to strengthen preparation for teaching in a subject area and meet the specific requirements for that area. Copies of the requirements for each area of specialization are available in the College Office and at the Elementary Education Division Office. Completion of the selected area of specialization will be indicated on the student's credentials. Courses in the area of specialization may be taken pass-fail when this option is offered.
Secondary Education

Secondary school teaching requires an understanding and appreciation of adolescence, a sound background in the liberal arts, an open attitude toward contemporary society and its problems and an understanding of and enthusiasm for the subject taught.

Junior and senior high school teachers usually specialize in a particular subject. They teach several classes each day, either in their main subject, in related subjects or in both. The most frequent combinations are English and history or other social sciences; mathematics and general science; and chemistry and biology or general science. Teachers of home economics, agriculture, driver education, music, art, industrial arts and business-oriented subjects less frequently conduct classes in other subjects.

Although classroom instruction is a large portion of their work, secondary teachers additionally plan and develop teaching materials; build, administer and correct tests; keep records and make up reports; consult with parents; supervise study halls; and perform other administrative duties. The growing use of technological aids and human resources alleviates many routine tasks.

Many teachers are also involved in supervision of student activities, including clubs and social functions, and become involved in nonacademic affairs as interested members of the community where they teach. Maintaining good relations with parents and the local community is an important aspect of the teaching profession.

At least one year of professional education beyond the bachelor’s degree and seven 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 students with special needs. Usually additional preparation and special certificates are required for these assignments.

Program Requirements

Foundation Courses

Undergraduate candidates for a certificate to teach in a secondary school (junior or senior high school) should complete the foundations courses listed below in their sophomore or junior year; graduate students may elect equivalent graduate courses with the approval of the college.

75:91 Pre-education Practicum (must be taken concurrently with 75:100) 2 s.h.
75:100 Introduction to Secondary School Teaching 2 s.h.
7P:75 Educational Psychology and Measurement 3 s.h.

Methods Sequence

Students must complete the special methods course in their major teaching field prior to the semester in which they elect to do student teaching.

Student Teaching

Students should make application preceding their senior year. Students elect 75:191 and/or 75:192 Observation and Laboratory Practicum in Secondary Education 16 in their junior year. The student teaching period is one full semester for 12 semester hours of credit.

Students who want or need more than 12 semester hours in that semester may elect one of these options:

75:190 Individual Projects in Laboratory Practice 1-3 s.h.
75:187 Seminar Curriculum and Student Teaching (especially sections in English, social studies, mathematics, etc.) 1-3 s.h.
7V:105 Selection and Utilization of Educational Media 2 s.h.

Teaching Majors and Minors

A sufficient number of courses must be completed to satisfy the requirements for a teaching major in a department within the College of Liberal Arts or the College of Business Administration (30-54 s.h.). The completion of an academic major as defined by the major department will satisfy this requirement in most cases. It is strongly recommended that students elect sufficient work in a field outside the area of the major to obtain approval by the University for teaching in a second field (18-24 s.h.). Copies of the teaching major and minor requirements are available in the College of Education Office and at the Secondary Education Division Office.

Special Education

The Division of Special Education expects its graduates will 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 need in special education toward the accommodation of handicapped children in regular classrooms with supplemetal help, rather than the segregation of handicapped children in special classes.

The student who wishes to explore 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, education programs currently provided for exceptional children, and methods of teaching exceptional children.

A student majoring in special education has three options: to qualify for certification to teach the mentally retarded at the elementary level, the mentally retarded at the secondary level or the physically handicapped at the elementary level. Both elementary programs require that the student also complete the requirements for certification in elementary education. At the secondary level the student must complete the regular secondary education foundations program and complete the major in special education including student teaching with the mentally retarded at the secondary level.

The program is enriched by team teaching, guest lectures, field trips, the use of observation techniques, laboratory experiences and extensive use of media.

The special education major requires a common core of coursework plus courses in the chosen area of teaching—either the mentally retarded or the physically handicapped.

Program Requirements

Common Core

7U:30 Introduction to and Observation of Exceptional Children 1 (fall semester, sophomore year) 3 s.h.
7U:34 Pre-Education Practicum: Exceptional Children 2 s.h.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>7U:31*</td>
<td>Introduction to and Observation of Exceptional Children (I) (spring semester, sophomore year)</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>and</td>
<td>Pre-Education Practicum: Exceptional Children (spring semester, sophomore year)</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>7U:34</td>
<td>Pre-Education Practicum: Exceptional Children (spring semester, sophomore year)</td>
<td>2 s.h.</td>
</tr>
</tbody>
</table>

*More students may be admitted to 7U:30 and 7U:31 than will be permitted to continue in the program specialties. Each student's academic record and performance in 7U:30, 7U:31, and 7U:34 will be reviewed and evaluated to determine which students will be permitted to continue in the program.

All students must complete the common core requirements. The following are additional requirements for each area of concentration.

### Certification in Elementary Education and Elementary Special Education with Emphasis in Mental Retardation

**Core coursework required by special education:**
- **7U:32** Instructional Methods and Procedures in Special Education I (fall semester, junior year) 5 s.h.
- **7U:33** Instructional Methods and Procedures in Special Education II (spring semester, junior year) 5 s.h.
- **7U:192** Laboratory Practice in the Education of the Mentally Retarded Child (plus 1 s.h. at the elementary level, senior year) 7 s.h.

### Certification in Elementary Education and Elementary Special Education with Emphasis in the Physically Handicapped

**Core coursework required by special education:**
- **7U:32** Instructional Methods and Procedures in Special Education I (fall semester, junior year) 5 s.h.
- **7U:33** Instructional Methods and Procedures in Special Education II (spring semester, junior year) 5 s.h.
- **7U:139** Orientation to Rehabilitation of the Physically Handicapped Child 3 s.h.
- **3:15** Introduction to Speech and Hearing Processes and Disorders 3 s.h.
- **7U:191** Laboratory Practice in Education of the Physically Handicapped Child (plus 8 s.h. at the elementary level, senior year) 7 s.h.

### Certification in Secondary Special Education (Mental Retardation)

Courses in special education in addition to special education foundations courses:
- **7U:32** Instructional Methods and Procedures in Special Education I (fall semester, junior year) 5 s.h.
- **7U:33** Instructional Methods and Procedures in Special Education II (spring semester, junior year) 5 s.h.
- **7U:133** Teaching the Educationally Different 3 s.h.
- **7U:103** Facilitating Career Development in the Schools 4 s.h.
- **7U:192** Laboratory Practice in the Education of the Mentally Retarded Child (one semester at senior level, senior year) 12 s.h.

### Other required coursework:
- **7P:75** Educational Psychology and Measurement 3 s.h.
- **7S:91** Pro-Education Practicum (or equivalent) 2 s.h.
- **7S:100** Introduction to Secondary School Teaching 2 s.h.
- **7P:170** Psychology of Reading 3-4 s.h.
- **7V:101** Operation of Audio-Visual Equipment 1 s.h.
- **7V:105** Selection and Utilization of Educational Media 2 s.h.
- **34:141** Introduction to Sociology: Principles of Criminal Justice 4 s.h.
- **34:140** Juvenile Delinquency 3 s.h.
- **34:140** Criminology 3 s.h.

Students are encouraged to elect additional courses in content fields appropriate to potential instructional roles.

### Advanced Studies

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 these graduate programs:

**Professional Improvement**

Students may be admitted to a Professional Improvement Program for purposes of taking limited coursework rather than a degree program. This program provides for minimal advisement and is appropriate for persons seeking salary credits, who are undecided about career plans, or whose applications are too late to permit processing for regular admission into degree programs. Faculty review committees may admit students to this program rather than as degree candidates due to incomplete information, unclear degree objectives and the like, in order to permit registration in the University.

### Certification Only

Students who have not been certified as teachers and who do not wish to pursue the M.A.T. or do not meet its admissions requirements may be admitted under the classification Certification Only. With students in this program, the advisor plans the academic major and educational sequence aspects of the program to meet the requirements for certification—including the American government-American history requirement for Iowa certification if it has not previously been met. Since enrollment...
in elementary education, special education and social studies and English in the secondary program is limited, admission of graduate students to this program is as carefully reviewed as for degree programs. Persons who wish to meet certification re-

requirements for positions other than as a teacher (i.e., counselor, administrator or curriculum specialist) and who meet basic re-

quirements and need only a few courses to validate or update their certification should apply for Professional Improvement status.

Master of Arts
The Master of Arts program is offered on both a thesis and non-

thesis basis. The non-thesis M.A. program usually provides

more specialized coursework than is found in the M.A. thesis program. The non-thesis program is not necessarily a terminal program, but students who expect to continue their studies on a doctoral program are urged to select the M.A. thesis program which offers more experience in research procedures. Students who complete a non-thesis M.A. program and are admitted to a Ph.D. program may be asked to submit evidence of writing and research skills to their advisor or division during the early part of their doctoral program.

Master of Science
This non-thesis degree is not recommended for students who plan to continue their education beyond the master's degree.

Master of Arts in Teaching
The M.A.T. program is a 38-semester-hour (minimum) non-thes-

is program designed for academically superior liberal arts gradu-

ates who included few or no professional education courses in 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, home economics, mathematics, science, social studies and speech and drama. A grade-point of at least 2.70 on undergraduate coursework is re-

quired for admission. At least 18 semester hours of graduate coursework in the student's proposed teaching field must be completed. A sufficient number of semester hours of graduate work in education (not less than 20) must be taken to satisfy certification requirements. A course in either American govern-

ment or American History is also required for Iowa certifica-

tion.

Specialist in Education
This degree is granted upon the completion of a prescribed two-

year, post-baccalaureate program designed for students prepar-
ing themselves professionally in such fields as teaching, admin-

istration and supervision and special services. Of the minimum of 40 semester hours required for the degree, 28 are prescribed in the area of specialization; the remaining credit may be earned in cognate fields, supervised experience, research and elective courses. The research must culminate in a written report. Other requirements and regulations applicable to the Ed.S. are the same as for the master's degree except that 15 semester hours of resident work on campus are required in one 12-month period or in two summer sessions and coursework completed ten years prior to the final examination must be evaluated to determine the amount of credit that may be accepted toward fulfillment of the program requirements.

Doctor of Philosophy
The Ph.D. is the highest academic degree and is conferred upon

these students who have demonstrated superior scholarship and

mastery of research skills in coursework as well as in the prepa-

ration and defense of a dissertation.

Bulletin
Prospective graduate students should write to the College for its bulletin, Advanced Studies in Education, which provides specific

information about the various programs, admission proce-

dures and requirements, and rules and regulations.

Advanced Degree Programs
The following are the College of Education's advanced degree offerings:

Division of Social Foundations, Adult and Higher Education

and Educational Media:

Adult Education M.A. Ed.S. Ph.D.

Educational Media M.A. Ed.S. Ph.D.

Higher Education M.A. Ed.S. Ph.D.

Social Foundations M.A. Ph.D.

Division of Educational Administration:

Educational Administration M.A. Ed.S. Ph.D.

Division of Elementary Education:

Elementary Administration M.A.* Ed.S.*

Elementary Education M.A.

Elementary Science M.S.

Developmental Reading M.A.

Division of Educational Psychology, Measurement and Statis-

tics:

Educational Psychology M.A. Ph.D.

Educational Measurement and Statistics M.A. Ph.D.

Reading Disability M.A.

Division of Secondary Education:

Secondary Administration M.A. Ph.D.*

Secondary School Curriculum M.A.

Art Education M.A.

Business Education M.A.

English Education M.A.

Mathematics Education M.A.

Music Education M.A.

Physical Education (Men) M.A. Ed.S.**

Physical Education (Women) M.A.

Science Education M.A. Ed.S.

Social Studies Education M.A.

Division of Counselor Education:

School Counseling M.A. Ed.S. Ph.D.

Rehabilitation Counseling M.A.

College Student Personnel M.A. Ed.S. Ph.D.

Counseling Psychology M.A. Ph.D.
Division of Special Education
Special Education and School Psychology M.A. Ed.S. Ph.D.

*Cooperation with educational administration.
**Cooperation with higher education.

Support Units and Special Resources
Cooperative School Systems Programs
Faculty and divisions of the College of Education engage in continuing service relationships with Iowa public schools and agencies. Programs are coordinated through the Office for Cooperative School Systems Programs.

Curriculum Laboratory
The Laboratory provides materials primarily for students and faculty members interested in curriculum problems. It brings into a convenient central location approximately 20,000 elementary and secondary textbooks, reference books, courses of study, bibliographies, pamphlets and non-print media such as films, slides, graphs, records, etc. The Laboratory also houses a 17,000-volume youth collection.

Early Childhood Education Center
This facility provides practicum, curriculum development and research opportunities for undergraduate and graduate students preparing to work with pre-kindergarten children. The Center enrolls some 84 children ages two months to five years. Both full-day and half-day programs are provided.

Educational Media Laboratory
The laboratory houses a variety of instructional equipment and materials. Its facilities provide opportunities to develop skills in design and production of instructional materials and in the operation of instructional equipment of all types. In addition, Laboratory staff members provide service to students and faculty of the College of Education for production of videotapes, color slides, films, super 8 films, transparencies and other materials related to instructional development.

A component of the Media Laboratory, the Computer-Based Educational Laboratory offers hardware and consulting support for computer applications and instructional development related to ongoing instruction of the College of Education.

Educational Placement Office
The Educational Placement Office serves undergraduate teacher education students interested in teaching positions as well as graduate students seeking other certified school positions. Graduates interested in college teaching positions in education or in other fields as well as those interested in administration or positions in higher education are also served by this Office.

Education-Psychology Library
The Library has approximately 103,000 volumes. It provides books, periodicals, reference books, films, ERIC microfiche, tests and a reserved book room for students and faculty.

Institutional Activities for the Classroom Teacher
This is a cooperative program between The University of Iowa and the State Department of Public Instruction involving the entire state of Iowa. The purpose is to conduct in-service programs for all classroom teachers of the handicapped.

Iowa Center for Research in School Administration
This research organization conducts studies of trends in Iowa schools; publishes special research reports; conducts local school surveys; develops management information systems services; provides computer-assisted class scheduling services, computer-assisted mark and attendance reporting, and third-party evaluations of various programs; and provides consultation and services in the field of computer applications in education.

The Iowa Testing Program
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 in school systems.

North Central Association
Iowa is one of the 19 states included in the North Central Association (NCA) of Colleges and Secondary Schools, the largest and most active of six regional accrediting associations in the United States. The primary purpose of the NCA is to foster improvement in education at the secondary and collegiate levels by self-evaluation of educational programs, visitation by evaluation teams and adherence to Policies and Standards for continued membership. The University of Iowa has supported the office of the chairman of the Iowa NCA State Committee.

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 opportunities for observation and practice in the diagnosis and teaching of severely retarded readers.

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 supervised by the Psychiatric Hospital and directed by the College of Education. Opportunities are available for student teaching and supervision in school psychological services.

Statistical Laboratory
The Laboratory contains a variety of calculating equipment. It provides experience in the application of such equipment in the analysis of statistical data, and it provides facilities for the analysis of research.

Teacher Certification Services
Though each state has its own teacher certification requirements, a majority of state certification agencies have entered in-
University Counseling Services

The facilities of the University Counseling Services are available to students in counseling psychology for research and practice purposes.

The University Hospital School

This facility contains two unique sections within the same complex, the Children's Rehabilitation section and the Pine School section. In cooperation with the University Hospital School, the College of Education studies and develops curricular procedures and materials for both sections of the Hospital School.

The Children's Rehabilitation 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 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.

The Pine School 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.

Faculty

Members of the College of Education faculty are active in research and writing and are well qualified by preparation and experience. Ninety-seven percent of the members of the faculty with academic rank held doctorates in their teaching fields, and 95 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.

Research and Development

The College has a strong history of commitment to educational development and research, as evidenced by the presence of the Lindquist Center for Measurement. 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.

Faculty Roster


Courses

For Undergraduates and Graduates

Adult Education

78/110 Introduction to Adult Education Philosophy and scope of adult education movement in United States. 3 s.h.

78/112 Teaching of Adults Adult learning factors and considerations in teaching techniques for adults. 3 s.h.

78/201 Administration of Adult Education Adult learning factors and considerations in teaching techniques for adults. 3 s.h.

78/204 Problems and Issues in Adult Education Adult learning factors and considerations in teaching techniques for adults. 3 s.h.

78/300 Individual Involvement in Adult Education 3 s.h.

79/305 Workshop: Adult Education 3 s.h.

79/350 B.A. Thesis in Adult Education 3 s.h.

79/400 Ph.D. Thesis in Adult Education 9 s.h.

Counseling and Guidance

5C108 Guidance: Procedures and Practices for Classroom Teachers 3-5 s.h.

Focus upon guidance procedures and practices used by classroom teacher in ele-
mercy school; designed to develop sensitivity to children and give teacher strate-
gies which help them learn. Review of career information methods and laboratory practice is application.

TC-108 Laboratory course focusing upon special techniques or the one-to-one relationship model in bringing about change in human systems. Prerequisite: consent of instructor.

TC-110 The Psychological Aspects of Women's Roles 1-2-2 A

2-3-3 A study of role-related factors and personality of the woman. Emphasis will be placed upon the individual's experiences and information associated with group practices; includes participation in personal growth group. Prerequisite: consent of instructor.

TC-115 Individual Instruction in Counseling Education Undergraduates only

Grants: courses of instruction.

TC-116 Making a Vocational-Educational Choice 2-2-2 A

Directs toward the more mature student who is concerned about their educational and voca-
tional roles; special emphasis given to the vocational decision-making process. Facilitates self-exploration and explanation of the world of work.

TC-117 Counseling for Related Professions 3-3-3 A

Introduces to counseling theory and techniques for persons who are entering pro-
fessions that require them to engage in helping relationships with clients. Emphasis

2-3-3 A

3-3-3 A

on related therapeutic and counseling methods and techniques.

TC-121 Student Appraisal Procedures 3-3-3 A

Techniques for administering and interpreting student-appraisal devices in elemen-
tary and secondary school guidance programs; standardized test devices; new study procedures.

TC-122 Introduction to Group Counseling 3-3-3 A

Survey of research, theory and practice in group counseling; includes applications of participating in groups and evaluation of various leadership styles. Open only to graduate students.

TC-123 Pre-Internship Experience in School Guidance 1-2-2 A

Structured field experiences, to be taken before the internship in school guidance, during which the student works as a part of a clerical aide or a full-time guidance counselor. Prerequisite: consent of instructor.

TC-129 Counseling the Culturally Different 3-3-3 A

General overview of disadvantaged persons, both rural and urban; general socio-

2-3-3 A

3-3-3 A

3-3-3 A

3-3-3 A

TC-139 The Role of the College Union 2-2-2 A

Role of college union on campus and its role in various aspects of college life. Prerequisite: consent of instructor.

TC-141 Introduction to Rehabilitation Services 2-2-2 A

History, philosophy, and psychology of rehabilitation; roles of rehabilitation workers and administrators. Prerequisite: consent of instructor.

TC-142 Rehabilitation Counseling 2-2-2 A

Counseling process in rehabilitation setting: appraisal and counseling procedures. Prerequisite: consent of instructor.

TC-147 Medical Aspects of Disability 2-2-2 A

Orientation in medical evaluation as part of rehabilitation process; body systems, medical terminology and medical description of disabilities of importance in coun-
selling, integration of medical information with social, psychological and emotional aspects of disability conditions.

TC-151 Seminar: Selected Topics in Rehabilitation 2-2-2 A

Topics which might be investigated include problems dealing with special disabili-
ty groups, changing occupational patterns in rehabilitative structure, rehabilita-
tive facility management.

TC-154 Vocational-Educational Counseling 3-3-3 A

Survey of theories and techniques of counseling clients with vocational and educa-
tional problems.

TC-155 Appraisal in Counseling 3-3-3 A

Critical study of research on appraisal, issues and personality are used in voca-
tional counseling and personnel selection; laboratory practice is made available to the laboratory counseling and personnel selection; laboratory practice is made available to the relationship of counseling.

TC-156 Problems in Counseling Women 3-3-3 A

The focus will be on counseling women for psychological equality; emphasis will be placed upon the current attitudes toward women and various special counseling techniques. Prerequisite: course in counseling, or permission of instructor.

TC-157 Marriage and Family Counseling 3-3-3 A

An advanced course in counseling theory and techniques as applied to problems of marriage and the family. Prerequisites: basic counseling courses and consent of in-
structor.

TC-158 Issues and Trends in School Guidance 2-2-2 A

Survey of research and authoritative opinion on career issues concerning school guidance; trends in school guidance and counselor education.

TC-159 Topical Seminar in Counseling Education 3-3-3 A

Special topics dealing with contemporary problems of counselors in specific settings. May be offered for partial fulfillment of major. May be repeated.

TC-160 Group and the Counselor 3-3-3 A

Special topics dealing with relationships of pre-counselor utilizing emphasis on various counseling techniques and evaluation of different treatment models. Prerequisite: credit in other

2-3-3 A

3-3-3 A

3-3-3 A

3-3-3 A

3-3-3 A

3-3-3 A

2-3-3 A

3-3-3 A
7C-335 Administration of College Student Personnel Services 2 s.h.
Organizational structure of administrative, personnel administration, human relations and other aspects of management for college student personnel workers.

7C-336 Seminar: College Student Personnel Research 3-1 s.h.
Lectures, discussions and seminars on advanced college student personnel research issues, may be repeated for credit.

7C-341 Seminar: Placement in Vocational Rehabilitation 1 s.h.
Prerequisite: consent of instructor.

7C-342 Seminar: The Bases of Disability 1 s.h.
May be repeated.

7C-351 Supervised Practice in Rehabilitation Procedures 1 s.h.
May be repeated. Prerequisite: consent of instructor.

7C-352 Supervised Field Work: Rehabilitation Procedures 1 s.h.
Field-dw work; taken on registered bargaining basis. Prerequisite: consent of instructor.

7C-353 Advanced Counseling and Psychotherapy 3 s.h.
Survey of theories and techniques of counseling clients with personal and interpersonal problems. Prerequisites: TC-3221, TC-3222.

7C-354 Experimental Approaches in Counseling Research 3-1 s.h.
Applicability of experimental methodology and laboratory procedures to study of counseling and vocational phenomena. May be repeated for credit. Prerequisite: consent of instructor.

7C-355 Counseling Process and Outcomes 3 s.h.
Gives student basic knowledge of type of research and process research on various counseling and psychotherapy procedures. Helps student find appropriate observational topics. Prerequisite: Ph.D. condition in appropriate field, or master's degree with consent of instructor.

7C-356 Seminar: Outreach Programs 2 s.h.
Review of techniques on outreach activities of counseling centers and community mental health programs; participation in an outreach activity and evaluation of the activity. Prerequisites: TC-435 or consent of instructor.

7C-367 Seminar: Group Counseling and Psychotherapy 3 s.h.
Survey of theories and techniques of group counseling and psychotherapy; integration of theory into supervised experience and research on group counseling. Prerequisite: TC-435.

7C-368 Advanced Practice in School Guidance 3 s.h.
Supervised practicum in counseling; presented to analyses of counselor styles and techniques; for advanced graduate students majoring in school counseling; educational program.

7C-371 Career Counseling 3 s.h.
Fostering qualified career guidance masters through techniques of career counseling. Emphasis on problem solving. Prerequisites: Ph.D. condition in appropriate field, and consent of instructor.

7C-383 M.A. Thesis in Counselling Education 1-6 s.h.
Prerequisite: consent of instructor.

7C-390 Educational Specialist Research in辅导员 Education 2 s.h.
Prerequisite: consent of instructor.

7C-405 Practicum in Counseling 1 s.h.
Supervised practicum in counseling. Prerequisites: TC-351 and TC-435 or equivalent, and consent of instructor. May be repeated.

7C-455 Supervising the Counseling Practicum 1 s.h.
Supervised experience in the supervision of counseling. Prerequisites: consent of instructor.

7C-483 Seminar: Research in Counseling 1-0 s.h.
Prerequisite: consent of instructor.

7C-484 Ph.D. Thesis in Counseling Education 1-6 s.h.
Prerequisite: consent of instructor.

Education Administration 2-6 s.h.
For majors in school administration; emphasis on previous courses in all phases of education administration and the general preparation for administration of education and the use of simulated materials in hearing communication, decision-making and organizational theory.

7D-322 Educational Systems Analysis and Operations 3 s.h.
Research and Analysis of educational planning and decision-making: includes linear programming, quality control, administrative decision-making, etc. Prerequisites: TC-3030.

7D-350 Elementary School Principal 5 s.h.
Organizations, supervision and administration of elementary schools; curriculum leadership, instructional practice and personnel relationships; site analysis and communication channels, basic requirement in administrative program.

7D-352 Elementary School Organization Patterns 3 s.h.
Organizational approaches analyzed with specific attention directed in emerging patterns; attention given to new trends in instructional procedures.

7D-399 Seminar: Systems Evaluation in Educational Decision-Making 2 s.h.
Decision-making, measurement, process and techniques of evaluation and design; centers on information and control of the collective, organizational, formative and summative evaluation of educational decision and program.

7D-399 Seminar: Public Relations 2 s.h.
Relationship between public schools as social institution and community; basic concepts, principles and dynamic process, ego-signs of interpretation.

7D-399 Seminar: Professional Development 2 s.h.
Professional practice, personnel, evaluation, inservice development, staff and welfare policies influencing professional maintenance of schools.

7D-399 Seminar: School Buildings and Sites 2 s.h.
Planning of design, construction, finance, rehabilitation and rearrangement of school buildings and sites, and development of standards for evaluation.

7D-399 Seminar: Individual Instruction in Educational Administration 1 s.h.
Prerequisite: consent of instructor.

7D-399 Seminar: Financial Management of Local School Systems 2 s.h.
Principles of budgetary procedures and consideration of debt settlement problems. Prerequisite: consent of instructor.

7D-399 Seminar: Theory in Administration 2 s.h.
Sociology and its contributions to theory in educational administration.

7D-399 Seminar: Legal Aspects of School Personnel 2 s.h.
Emphasis on the teacher and student with some attention to the principal, superintendents, board member and parents, includes: liability, supervision, rights, privileges and responsibilities of school personnel, personal liability of the individual school officer from court decisions; constitutional and statutory provisions. Designed for teachers and administrators.

7D-399 Seminar: Legal Aspects of School Administration 2 s.h.
Emphasis on the legal aspects of educational administration, including organization, proper fiscal, religious, segregation and intergovernmental relations; use of constitutional and statutory provisions plus court decisions. Designed primarily for administration, but applicable to teachers.

7D-399 Seminar: Law and Superintendents 2 s.h.
Problems of urban centers related to education, city government, institutions; inter-state research projects - duties of academic specialists in urban problems used as resource people. Taught in Sociology-M.P.L. Urban and Regional Planning Department, School of Social Welfare.

7D-399 Seminar: Elementary Supervision and Administration 2 s.h.
For experienced supervisors and administrators: in-depth study of crisis of major significance in elementary school administration and preparation and evaluation of prior research and consideration of research proposals. Prerequisite: supervision and consent of instructor.

7D-399 Seminar: Problems in Public Administration 2 s.h.
Analysis of problems in planning of school government and general government; state and trends in school-intergovernmental relations; preparing forms promoting improved school/community relations: model building.
70/350 Seminar: Computer Applications in Education
Research and practice in applications of computer to educational administration. Prerequisites: 70/203 and 70/204.

70/351 Seminar: Research Methodology
Administration 1-3 a.h.
Problems of social research management. Emphasis on methodology and issues in research design. Course work will include exercises in the crucial stages of the research process. Prerequisites: 70/203. Corequisite: 70/352.

70/361 Seminar: The Economics of Education
Emphasis is on applications of economic theory and methodology to education. Prerequisites: 70/203, 70/204, and 70/206. Corequisites: 70/351 and 70/352.

70/375 Seminar: Educational Policy and Politics
Policy-making and implementation of educational policies and programs. Course work will include exercises in the crucial stages of the research process. Prerequisites: 70/203. Corequisite: 70/352.

70/395 Seminar: Research Design
In-depth study of research methodologies and designs. Prerequisites: 70/203, 70/204, and 70/206. Corequisite: 70/352.

70/397 Seminar: Organizational Theory and Educational Administration 3 a.h.
Studens select work of particular interest or theoretical and developmental problems for presentation and discussion. Prerequisites: 70/203, 70/204, Ph.D. candidacy and consent of instructor.

70/400 Seminar: Value Problems in the American Education System
Analysis of philosophical and sociological issues which underlie American system for administration of public education. Emphasis on changing trends in education. Class work will include exercises in the crucial stages of the research process. Prerequisites: 70/203. Corequisites: 70/351 and 70/352.

70/415 Seminar: Recent Developments in School Administration
In-depth study of developments in school administration. Prerequisites: 70/203. Corequisites: 70/351 and 70/352.

70/421 Seminar: Case Studies in School Administration 3 a.h.
Administrative problems and issues experienced in school administration. Corequisites: 70/203 and consent of instructor.

70/430 Field Service Project in Educational Administration
Prerequisite: consent of instructor.

70/435 A Thesis in Educational Administration
Prerequisites: consent of instructor.

70/436 Educational Specialist Research in Educational Administration
Prerequisites: consent of instructor.

70/493 Ph.D. Thesis in Educational Administration
Prerequisites: approval of instructor.

Elementary Education
70/711 Methods and Materials: Elementary School Physical Education 2 a.h.
For physical education majors only. Same as Physical Education for Women 28/71.

70/712 Methods and Materials: Elementary School Physical Education 2 a.h.
For physical education majors only. Prerequisites: 70/711 or consent of instructor. Same as Physical Education for Women 28/72.

70/732 Phys. Education 2 a.h.
To be taken concurrently with 70/140. Involves observing and assisting elementary school students and teaching teachers in performing daily tasks for at least six hours per week. Objectives to help university student majors assess potential skills and interest in teaching in elementary school.

70/100 Introduction: Elementary Teaching
2 a.h.
An overview of elementary teacher qualifications, opportunities, requirements, and responsibilities in teaching.

70/120 Nutrition Methods in Speech and Hearing
2 a.h.
Emphasis on elementary grades. Students study in conjunction with 70/112, which provides approximately 70 hours of coordinated clinical experience in elementary schools. Prerequisites: consent of instructor.

70/119 Methods: Basic Skills and Techniques in Music
3 a.h.
Development and improvement of necessary music skills and techniques for effective music teaching in elementary school. Required of all music majors in elementary education program.

70/125 Methods and Materials: Music for the Classroom
Teacher 3 a.h.
Sings songs, plays piano, music reading, rhythm activities and instruments. Cinema, music, and musical activities for elementary grades; teaching and organization of classroom music program. For elementary music education major only.

70/131 Elementary School Physical Education
3 a.h.
Matters, methods, curriculum planning and improvement of performance skills; primarily for elementary education majors.

70/125 Methods and Materials: Art for the Classroom
Teacher 3 a.h.
Combination arts course. Same as 70/130.

70/132 Children's Literature
3 a.h.
Closely involves investigation into children's books. For elementary education majors, history and analysis of books for children, illustrations of these books and recent trends in the use of literature. Same as Library Science 21/12.

70/123 Elementary Education
3 a.h.
Survey of children's books appropriate for preschool and early primary grades and relating, together with related activities for counting or storytelling for children. Prerequisites: 70/132 or 70/135. Same as Library Science 21/12.

70/126 Practice: Environmental Education
Same as 70/134.

70/134 Methods: Art
Intermediate methods course for study of theory and methods of art education at elementary and secondary levels. Child development and child art education, creativity, criticism, and art therapy planning, evaluation, design and instructional materials for elementary school, visual and craft experiences for elementary and secondary students. Prerequisites: 70/121 and 70/132.

70/162 Methods and Materials: Elementary School Music 3 a.h.
For music education majors only. Offered in three consecutive hours. Same as Music Education 16/143.

70/165 Methods: Early Childhood Education 5 a.h.
Focuses on current educational trends in all curricular areas, emphasis on application of educational theory and instructional materials in pre-kindergarten education. Open to both Kindergarten and elementary education majors and graduate students.

70/182 Supervised Teaching in an Early Childhood Center
Supervised teaching in pre-kindergarten early childhood center. Application must be made to the Office of Student Personnel, College of Education. Prerequisites: 70/131, 70/134, 70/135, 70/136, 70/137.

70/160 Methods: Elementary School Language Arts 3 a.h.
Materials, teaching methods, and a language arts program for kindergarten through grade six. Emphasis on planning processes and development of program and methods teaching skills. Approaches to pupil self-discovery through creative dramatics and creative writing, and to language development, concepts concerning language and skills of oral and written communication.

70/161 Methods: Elementary School Social Studies 3 a.h.
Objectives and course for grade kindergarten through six; development of work study skills and group methods.
of specific teaching techniques needed to translate the theory into practice. Specifi-
cally designed for in-service teachers.

7E-259 Individual Instruction in Elementary Education
Preparation: consent of instructor.

7E-260 Elementary Curriculum
3 a.h.
Major work required centers around the preparation of curriculum units, including development of instructional equipment; approval procedures; staff participation in curriculum development; liaison responsibilities in supervision and administration programs.

7E-261 Seminar: Museum Teaching of Early Childhood Education
3 a.h.
Analysis of historical and theoretical developments of early childhood education programs; readings and class discussions.

7E-262 Science Education in the Elementary School
3-2-3 a.h.
Analysis of major science series and curricular materials; historical, social and in-
formational investigations of each program considered; sample programs experi-
enced by observation, demonstration and use in the classroom. For graduate students interested in supervision, administration or college teaching.

7E-263 Seminar: Elementary Education
3-2-2 a.h.
Preparation: consent of instructor.

7E-264 Seminar: Elementary Education
3-2-2 a.h.
Preparation: consent of instructor.

7E-265 Introduction to Research in Art Education
3 a.h.
Study of methods of inquiry used in research in education and related discli-
pies; main, critical, social, economic and educational aspects; foundations of the philosophy of education; theoretical aspects of methods of research design. Same as 7E-508.

7E-267 Seminar: Aesthetic Education
2-2-2 a.h.
Theories of art and aesthetics as they relate to teaching; educational and historical models; evaluation of educational implications of current research and professional trends. Same as 7E-267.

7E-268 Seminar: Teaching Children's Literature
2 a.h.
Development of curricular concepts and a deepening in children's literature; constructive learning of courses in literature required; emphasis placed on development of techniques for teaching children's literature in the classroom. A prerequisite to supervised student teaching experience arranged. Preparation: 7E-123 and consent of instructor.

7E-269 Seminar: Art Education
2 a.h.
Preparation: consent of instructor. Same as 7E-269.

7E-270 Problems in Mathematical Education
2-2-2 a.h.
Basis for understanding and influence of teaching in mathematics, K-12, including examination of teaching situations and methods. Preparation: consent of instructor.

7E-271 Seminar: Elementary School Language Arts
3 a.h.
For advanced students in elementary education who have taken systematic course courses. Same as 7E-269. Preparation: consent of instructor.

7E-272 Seminar: Elementary School Social Studies
3 a.h.
For advanced students in elementary education who have taken systematic courses. Same as 7E-272. Preparation: consent of instructor.

7E-273 Seminar: Current Research and Concerns in Elementary Education
3 a.h.
Trends and modern research; advanced investigation; original research reports read, studied and discussed; emphasis on teaching theory. Primarily for advanced graduate students.

7E-274 Seminar: Elementary School Mathematics
3-3 a.h.
Intensive study and seminar discussion of curriculum and instructional aspects in elementary school mathematics instruction; e.g., developing understanding of mathematical operations in the context of problem solving and repeated situation; generaci-

7E-275 Seminar: Elementary Reading
2-2-2 a.h.
Preparation: consent of instructor.

7E-276 Reading Clinic: Supervision
2 a.h.
Preparation: consent of instructor.

7E-277 Supervision of Science
3 a.h.
Preparation: preparation and techniques characterizing problems of sci-
ence supervision; special work with articulation of K-12 program and situations arising from manufacturing programs in intermediate grades; junior high; high school; science education in religious, state and national schools; "practicing" science supervisors utilized. Preparation: for supervision of advanced ele-
ments. Same as 7E-276 and General Science 97-274.

7E-278 Seminar: Introductory to Art Education
3-3 a.h.
Study and analysis of fundamental concepts derived from art education and related disciplines. Preparation: Seminar in Elementary: study of current issues in art education. Same as 7E-278.

7E-279 Supervision of Instruction
3-3 a.h.
Preparation: Pre-service procedures in working effectively with beginning teacher and staff group; design for supervision and administration responsibilities for elementary school; special emphasis on various ways of approaching supervisory-teacher rela-
tionships. Preparation: consent of instructor.

7E-280 Observation and Analysis of Instructional Practice
2-2-2 a.h.
Preparation: consent of instructor.

7E-281 Advanced Laboratory in Elementary Education
2-2-2 a.h.
Conservation of 7E-281, but may be taken independently with consent of instruc-
tor.

7E-282 Laboratory Practice in Supervision
2 a.h.
Individual practice and supervised experiences in a variety of supervisory roles. Preparation: consent of instructor.

7E-283 Practicum in College Teaching
2 a.h.
Preparation: consent of instructor.

7E-284 Special Problems in Science Education
2-2-2 a.h.
Individual research project which may evolve into thesis for advanced students; in addition, special investigations for advanced students. Preparation: consent of instructor.

7E-285 Field Service Project in Elementary Education
Preparation: consent of instructor.

7E-286 I.A. Thesis in Elementary Education
Preparation: consent of instructor.

7E-287 Educational Specialist Research in Elementary Education
Preparation: consent of instructor.

7E-288 Seminar: Child Art and Art Education
2-2-2 a.h.
Analysis and evaluation of current concepts of child art and art development, within the social and psychological development of children and art, child development and art education. Same as 7E-288.

7E-289 Reading in Education
2 a.h.
Preparation: independent research under advisor; advanced study of research method and de-
sign; application to major educational problems; may be arranged as special study or in special problems area. May be repeated.

7E-290 Ph.D. Thesis in Elementary Education
Preparation: consent of instructor.

Social Foundations and Comparative Education
7F-100 History of American Education
2-2-2 a.h.
Our educational thinking and action of past 30 years as they have contributed to the American educational system and its democratic values.

7F-101 European Schools
2-2-2 a.h.
Study of educational developments of European nations, with emphasis on the development of education in England, France, Germany, Italy, Spain and Russia.

7F-102 Comparative Education
2-2-2 a.h.
Problems and trends of education in selected areas and countries of Asia, Africa and South America.

7F-107 History of Education
2 a.h.
Ideas and actions of great educational contributors from earlier times to present. Prepar-
sation: some social sciences courses.

7F-117 Philosophies of Education
2-2-2 a.h.
Survey of the philosophical background and practical implications of the Great Books, with special emphasis on the philosophy of the liberal arts.
75:237 Teaching Mathematics in Middle School and Junior High School 3 s.h.
Survey of methods, materials and recent curriculum developments for junior high school mathematics, including history of computation, problem solving, logical thinking, set theory and informal geometry.
75:238 Teaching the Major Achievements in Mathematics 3 s.h.
Improvement programs for improving lower ability and mathematical proficiency of low achieving students. Same as 75:238.
75:240 Supervision and Administration of Music 3 s.h.
Opportunities for students and experienced teachers to share experience in the public schools.
75:241 Music Education Workshop: Instrumental Music in the Public Schools 1-2 s.h.
Same as Music 25:326
75:243 Supervision and Curriculum Development in Art Education 3 s.h.
Problems and responsibilities of art teacher including creative facilities, field trips, requirements, twenty semester planning and reporting; study of factors influencing art education. Credit given for organization, preparation, and evaluation. Same as 75:243 and 45:322.
75:246 Supervision of Physical Education 3 s.h.
Designed primarily for students majoring in (or who will minor) physical education; survey of principles and problems involved in organization and supervision of physical education programs; emphasis on research and development of innovative, novel types of physical education programs, new methods of instruction, and evaluation of present physical education programs for men and women.
75:260 Problems of Science Education Part I: Instruction 3 s.h.
Investigation of research designs, evaluation, evolution of course materials; planning of pilot studies and implementing research philosophy in science education. Required for secondary science teachers and students in science education. May be repeated. Same as General Science 97:260.
75:261 Construction of Teaching Materials for Science 3 s.h.
Preparation of special laboratory materials for science education in junior high and high school years; study of current materials in physics, chemistry, biology and practical applications of scientific principles in junior high school science; principles of effective thinking and instruction; selection and evaluation of materials; junior high school science materials exhibit; laboratory methods; special problems in science education. May be repeated. Same as General Science 97:261.
75:262 Advanced Math Methods: Science Education 3 s.h.
Implements research philosophy of science teaching, experiment with science teaching in junior high school; major methods and problems are reflected in current secondary and college science teaching. Open to graduate students in science education, same as 266.
75:263 The Science Curriculum 3 s.h.
National programs at secondary and college levels: evaluation and development of programs of training for scientific and technical workers. Same as General Science 97:262.
75:264 Bibliography of Science 3 s.h.
Primary sources in science. Personnel, practices, responsibilities and techniques characterizing scientific advancement as it has progressed. Emphasis on continuous improvement in the teaching of science. Reading assignments serve for both junior high and high school science. Emphasis on recent junior and senior high school science texts. May be repeated. Same as 266.
75:265 Structure of Science and its Application in Science Teaching 3 s.h.
Examine philosophical underpinnings of science, explore applications of what understanding to problems and issues in science education; review the inclusion of nature study in science education, discuss the nature of science in science education, discuss "anthropology of science" in science education, compare science and art education. May be repeated. Same as General Science 97:265.
75:266 History of Science and Its Role in Science 3 s.h.
Examine contributions of ancient and modern civilizations to science and explore the historical development of science and technology. Emphasis is placed upon problems and issues in science education; explore the use of history to broaden the lenses of science, logical scientific papers as course materials, case study techniques, science in a sociological perspective, etc. Required for the M.A. and Ph.D. degrees. Permission required to take this course. May be repeated. Same as General Science 97:266.
75:267 History of Secondary School Administration 3 s.h.
Role and responsibilities of secondary school administrators in planning and implementing the educational program, staff selection, salary adjustment, personnel planning, supervising administrative student personnel services and the direction of managerial operations.
75:268 Workshop: Teaching Dramatic Art 3 s.h.
Interpretation and Speech 3 s.h.
Survey of methods, materials and recent curriculum developments for junior high school mathematics, including history of computation, problem solving, logical thinking, set theory and informal geometry.
75:269 Seminar: Problems and Methods in Studying and Teaching about Religion 3 s.h.
Survey of major topics related to the teaching about religion and the value of this instruction in the religious education and social studies curriculum. May be repeated. Same as 75:253.
75:282 Total Curriculum of Religion Curriculum 1 s.h.
Construction of religious curriculum in the junior and senior high school curricula; study of results of the study dealing with religion. Same as Religion 35:194.
75:290 Curriculum Development in the Social Studies 3 s.h.
General method for school curricula, curriculum preparation and social studies teachers; major social indices present status of social studies programs, trend and potential of curricular research and development in future; emphasis is placed on curriculum development and supervision; investigative study applied.
75:292 Current Issues, Approaches and Methodologies in Social Science 3 s.h.
Emphasis on the design of educational programs for teaching to see problems in one's own social environment; techniques include case studies, role play, simulation, sociological inquiry and value clarification.
75:293 Workshop: Social Studies Projects 3 s.h.
Explores the relevance, orientation, teaching materials and a number of significant curricular developments such as secondary subjects, social, social science, junior and senior high school; use of course materials, development of model lessons and plans for adapting the materials in local school situations.
75:294 Advanced Techniques in Supervision in Social Science 3 s.h.
For experienced teachers and administrators; orientation to current, open social science; techniques in course-materials, new curricula; curriculum renewal; problems of relating curricular change considered; persons of performance evaluated and evaluated; strategies developed for improving number of students.
75:297 Seminar: Social Sciences Education 3 s.h.
Particular emphasis on history and current trends in secondary science education; emphasis on the philosophy, organization, and importance of social science education. Same as Social Science 97:297.
75:300 Junior High School and Middle School Organization and Administration 3 s.h.
History of junior high school and development of middle school; exhibit of presentations and program of study, social science education. Same as Social Science 97:300.
75:301 Junior High School and Middle School Curriculum 3 s.h.
Comparisons of practices in junior high school and middle school; objectives and evaluation in various social studies areas. Same as Social Science 97:301.
75:302 Seminar in the Secondary School 3 s.h.
Utilizing the instructional program and considerations of special instructional programs in junior high school and middle school. Emphasis is placed on problematical instructional programs.
75:303 Secondary School Curriculum 3 s.h.
Theory and principles of secondary curriculum; analysis of components of curriculum; study and discussion of practices and content in various subject areas.
75:307 Individual Supervision in Secondary Education 3 s.h.
Practicum course in art education. Same as 75:307.
75:308 Introduction to Research in Art Education 3 s.h.
Survey of methods of inquiry for research in the education and related fields; materials, related materials, the contents of research, technical paraphernalia, exploratory, preparation of paper, writing of research reports. Same as 75:308.
75:309 Seminar: Aesthetics and Education 3 s.h.
Emphasis on the development of secondary education in the field of art education; generalization of social science and art education. May be repeated. Same as 75:309.
75:311 A.S. Seminar: English Language 2 s.h.
Emphasis on the development of secondary education in the field of English language; may be repeated. Same as 75:311.
75:315 Seminar: Mathematics Education 2 s.h.
Practicum course in the teaching of mathematics. Same as 75:315.
75:316 Problems in Mathematics Education 2 s.h.
Review of research in teaching of mathematics. May be repeated. Including the evaluation of
7V/142 Graphic Communications Materials
7V/143 Photography for Instruction
7V/144 Videotape in Education
7V/145 Computer Applications to Individualized Instruction
7V/146 Principles of Graphic Communication
7V/147 Survey of Educational Media Research
7V/148 Special Topics in Educational Communications
7V/175 Introduction to Educational Media and Technology
7V/204 Educational Media and the Systems Approach to Instruction

College of Education

7V/142 Graphic Communications Materials
- Planning and presentation of graphic materials for communications and instruction; experience in laying-out, display, typography, design, drafting, duplicating, simple layout and high contrast photomechanical techniques. No graphics background required.

7V/143 Photography for Instruction
- Planning and production of instructional materials using still or motion picture photography; basic still camera; major project required.

7V/144 Videotape in Education
- Videotape production and evaluation units for an independent research project; use of VTR equipment, signal, sound, editing and graphic for videotape production; selection and evaluation criteria and guidelines for different production experience in writing with professional classes provided.

7V/145 Computer Applications to Individualized Instruction
- Introduction to computer-assisted instruction (CAI), on-screen computer languages, computerized instruction and development of individualized learning materials, including CAI software material. Same as Computer Science 250A/114.

7V/146 Principles of Graphic Communication
- Language and design of graphic communications materials; principles from psychology and art; investigation of the relationship and analysis of effectiveness of graphic materials. No art skill or experience required. Not a production course.

7V/147 Survey of Educational Media Research
- Investigation of research from the historical sciences, communications technology and management design problems related to systems of instruction and related learning experiences.

7V/148 Special Topics in Educational Communications
- Designed to cover areas of special interest for graduate students; content will vary from semester to semester.

7V/204 Educational Media and the Systems Approach to Instruction
- Planning for instruction through systematic development of learning units effectively utilizing all types of instructional resources. Prerequisites: TV 105 and consent of instructor.

7V/205 Research Methods in Educational Media
- Research problems, experimental design, evaluation criteria and writing for publication. Prerequisites: TV 103 or equivalent, TV 116, TV 145 and consent of instructor.

7V/210 Practicum in Educational Media
- On-campus supervised administrative or other non-teaching and non-instructional experiences in the University Auditory Center and/or the College of Education.

7V/215 Seminar: Educational Media
- Course varies from semester to semester. Prerequisites: consent of instructor.

7V/216 Individual Practicum in Educational Media
- Consists of an individual assignment of specific course or the study. Prerequisite: consent of instructor.

7V/220 Internship in Educational Media
- On-campus supervised administrative and/or non-teaching experiences in public school, local agency or industry. Prerequisite: consent of instructor.

7V/225 M.A. Thesis: Educational Media
- Prerequisite: consent of instructor.

7V/226 M.R. Thesis: Educational Media
- Prerequisite: consent of instructor.

7V/227 Ph.D. Thesis: Educational Media
- Prerequisite: consent of instructor.

Education Interdisciplinary

7V/102 Pedagogical Development in Schools
- 3 s.h.
- General course for understanding work with emphasis on job analysis, and a wide spectrum of industry courses in area of special training and instructional media and materials with emphasis on special training and instructional media.

7V/201 Current Issues in Education
- 3 s.h.
- Seminar to explore implications of pedagogical practice on educational practice with special emphasis on issues of educational policy and student development.

7V/454 Seminar: Psychology and Education of the Culturally Different
- 3 s.h.
- Seminar to explore implications of cultural sensitivity and deprivation on psychological development and school adjustment combined with field project of student's choice. Prerequisites: consent of instructor.
The College of Engineering consists of six departmental subdivisions. Programs are offered leading to the Bachelor of Science, Master of Science and Doctor of Philosophy degrees in chemistry, civil, electrical, industrial and management, and mechanical engineering, and to the M.S. and Ph.D. degrees in mechanics, hydraulics and in environmental engineering. Any of the interdisciplinary programs in Engineering may be combined, in a five-year option, with a Bachelor of Arts program in the College of Liberal Arts, 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. Typical of such interdisciplinary opportunities is the biomedical curricular option.

Undergraduate Programs

Flexibility of program arrangement is a feature of the engineering curriculum at Iowa. The 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 or an interdisciplinary combination in the senior year.

Undergraduate students in engineering take more than one-third of their instruction in courses with students in other colleges, and interdisciplinary interests are encouraged. The undergraduate programs are accredited by the Engineers Council for Professional Development.

Degree Requirements

The Bachelor of Science degree in engineering requires a minimum of 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 socio-humanistic studies program consisting of a two-semester sequence of eight hours in literature and composition and a guided elective sequence of 15 semester hours selected to form a social science sequence and a historical-cultural sequence of at least six semester hours each.

Social science courses may be selected from those offered by the departments of Anthropology, Economics, Geography, Journalism, Political Science, Psychology, Social Work, or Sociology.

The historical-cultural sequence may consist of core courses in the historical-cultural area and/or the departments of American Civilization, Classics, East Asian Languages and Literature, English, European Literature and Thought, History, Linguistics, Philosophy, and Psychology. Advanced courses in any foreign language department will also satisfy the historical-cultural requirement. Studio courses in art and music are not acceptable.

Departmental course and hour requirements in engineering are designated in the curriculum outlines of each department.

The Combined Program

In response to an increasing demand for engineers with strong backgrounds in the humanities, social sciences and languages, Iowa offers a combined program leading to the Bachelor of Arts degree in the College of Liberal Arts and the Bachelor of Science degree in engineering or in a designated department of engineering. By proper scheduling of coursework in consultation with advisors from the College of Liberal Arts and Engineering, the student in the combined program can meet the baccalaureate degree requirements of both colleges in five academic years.

Professional Registration

Admission to practice professional engineering is governed by the laws of each state and requires registration. The minimum standards include graduation from a recognized engineering curriculum of at least four years, followed by at least four years of practical experience. The Iowa Board of Engineering Examiners has adopted the plan of admitting College of Engineering graduates to the rating "Engineer in Training" by an examination on engineering fundamentals given at the University near the time of graduation. Completion of registration as a "Professional Engineer" requires an advanced examination following professional experience.

Faculty

Because the College recognizes the value of interchange between faculty and students, core courses are taught largely by faculty. Recognizing that a university faculty has a responsibility for the production as well as the dissemination of knowledge, the College seeks to achieve a balance between teaching and research. Members of the faculty in engineering represent a wide range of practical, theoretical, 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 32,500 books and 750 periodicals. It is equipped with microfilm and microfiche readers.

Biomechanics Laboratory

The Laboratory is equipped for research in stress analysis and
modeling associated with biomechanical systems. Included are a photoelastic bench with 12-inch transmission polaroscope, photoelastic oven, fringe multiplier, contour projector, photo-stress meter and recording equipment.

Chemical Engineering Laboratories

The Department of Chemical and Materials Engineering is located in the Chemistry-Biology Building. Its main laboratories include pilot plant equipment for the study of industrial evaporation, distillation, drying, fluid flow and heat transfer. A section of the laboratory devoted to nuclear technology contains a subcritical nuclear reactor, a pulsed neutron generator and a reactor simulator. Laboratories have recently been added for biofuels research. Smaller laboratories are provided for investigations of processes and other engineering materials. Laboratories for individual research are available to graduate students; these are equipped with chromatographs, analog computers and other instruments.

Electrical Engineering Laboratories

The instructional laboratories of the Department of Electrical Engineering include dynamic systems, digital systems and control systems laboratories, and a general-purpose laboratory for special projects. Research laboratories are equipped for investigations 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 research 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 and University Water Treatment Plant. Research in water pollution abatement is conducted primarily in the Morgan Laboratory located at the Iowa City-University wastewater treatment plant. This Laboratory 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 environmental research are conducted at the 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, naval testing, cutting and fabricating. Human factors laboratories are equipped to investigate basic motor capabilities and the effects of selected task and environmental variables. Unusual equipment for the measurement of human factors includes electronic timing, force sensing, recording and computation equipment.

Mechanical Engineering Laboratories

The Mechanical Engineering laboratories contain instruments and equipment for experimental investigations in a variety of fields. These include thermodynamics, thermal systems, heat transfer, gas dynamics, behavior of materials, control systems and machine dynamics. The laboratories provide educational experience in all important scientific areas on which mechanical engineering is based and valuable experience in modern methods of measurement and analysis including use of modern computers.

Structures and Materials Testing Laboratories

These laboratories are equipped for the determination of physical properties of materials of engineering construction, such as soils, aggregates, concrete, metals, papers and plastics. Included are a compression testing machine, a universal testing machine and an axial testing machine, along with mechanical and electronic instrumentation for the accurate measurement of deformations under load. The structural laboratory also contains a prestressing bed and frame which permits construction of prestressed concrete structural members. A soils laboratory contains consolidation and triaxial testing equipment of the latest design.

Hydraulics Laboratory

Located on the west bank of the Iowa River at the end of the University Dam, this Laboratory houses the latest facilities for undergraduate and graduate laboratory instruction, and for basic and applied research by staff and students in the area of hydraulics and fluid mechanics. The equipment includes an IBM 1800 data acquisition and control system of on-line analysis of experimental data, a 330-foot tow tank, several flumes and wind tunnels, a low-temperature flow facility for investigation of ice phenomena, a dispersive flame 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.

Placement Services

Students and alumni can avail themselves of the placement services provided by the College of Engineering. Interview rooms and a placement library of information material are located in the Engineering Building. Assistance is available for arranging interviews and obtaining information on job opportunities.

Institute of Hydraulic Research

The Institute of Hydraulic Research has earned international recognition for its research and educational activities in the area of fluid engineering. It was organized in 1931. Current research is oriented toward problems related to environmental pollution, hydraulics, water supply, water distribution, power generation and irrigation systems and data handling for fluids research. Student participation in all research and consulting activities characterizes the Institute's operations.

Student Organizations and Activities

The entire College of Engineering student body is organized as the Associated Students of Engineering. Engineering students publish a monthly periodical, the Iowa Tranist.

Student branches of the American Institute of Chemical Engineers, the American Institute of Industrial Engineers, the American Institute of Mining, Metallurgical and Petroleum Engineers, the American Society of Civil Engineers, the American Society of Mechanical Engineers and the American Society of Electrical Engineers are active in the College.
can Society of Civil Engineers, the Americas 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 ja-

Given name year senior and junior years. Senior and graduate engineering students who have special ability in research are eligible for election to Sigma Xi—Phi Lambda Upsilon, honorary chemistry and chemi-

classes engineering fraternity; Chi Epilon, honorary civil engineer-

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 ap-

pl with the appropriate transcript of their high school grading

High school physics and chemistry are recommended for all applicants.

Undergraduate Transfer

The applicant must submit a formal application and official tran-

The Director of Admissions will review individual records of applicants who do not meet the minimum requirements and may offer probationary admission.

Graduate Students

Applicants for admission to graduate studies in any college of the University must meet the general requirements for admission to the Graduate College (see "Graduate College").

General Engineering Courses

S1S 1 Introduction to Engineering—Design I 2 s.h.

S1S 2 Introduction to Engineering—Design II 2 s.h.

S2T 3 Introduction to Engineering Graphics 1 s.h.

S4T 4 Engineering Drawing 2 s.h.

S5T 5 Thermodynamics I 4 s.h.

S6T 6 Dynamic Systems Analysis I 2 s.h.

S7R 7 Dynamics II 2 s.h.

S8T 8 Vibrations 2 s.h.

S9T 9 Fluid Mechanics 4 s.h.

S11T 11 Fluid Mechanics II 4 s.h.

S12T 12 Heat Transfer 4 s.h.

S13T 13 Electric Machinery 4 s.h.

S14T 14 Power Systems 4 s.h.

S15T 15 Controls for Electric Power Systems 2 s.h.

S16T 16 Electric Machines 4 s.h.

S17T 17 Power Systems II 4 s.h.

S18T 18 Power Systems III 4 s.h.

S19T 19 Power Systems IV 4 s.h.

S20T 20 Power Systems V 4 s.h.

S21T 21 Power Systems VI 4 s.h.

S22T 22 Power Systems VII 4 s.h.

S23T 23 Power Systems VIII 4 s.h.

S24T 24 Power Systems IX 4 s.h.

S25T 25 Power Systems X 4 s.h.

S26T 26 Power Systems XI 4 s.h.

S27T 27 Power Systems XII 4 s.h.

S28T 28 Power Systems XIII 4 s.h.

S29T 29 Power Systems XIV 4 s.h.

S30T 30 Power Systems XV 4 s.h.

S31T 31 Power Systems XVI 4 s.h.

S32T 32 Power Systems XVII 4 s.h.

S33T 33 Power Systems XVIII 4 s.h.
Biomedical Engineering

Stearing Committee Co-Chairmen: Owen R. Hall, Donald B. McDonald

Degree offered: B.S.

The past two decades have seen a tremendous growth of technological activity in biology and medicine. As engineers have become increasingly involved with projects in the life and health sciences, there has been increased need for them to become more familiar with the fields of biology and medicine. Recognition of this need has led to the emergence of a new interdisciplinary engineering activity designed to bridge the gap between the life sciences and engineering—the biomedical engineering profession. The undergraduate biomedical engineering program is a curricular option offered within the Bachelor of Science program in engineering.

The curriculum outlined below is based on the foundation provided by the College of Engineering core curriculum, and has been developed to prepare students for the challenges and opportunities associated with careers in the biomedical engineering profession. Students who complete this program may pursue career opportunities in industry (the design and development of biomedical instrumentation, diagnostic aids, life support systems, prosthetic and orthotic devices, man-machine systems, etc.) or they may elect to continue their formal education in the engineering, medical or legal professions. The program has been carefully designed so that it is possible to satisfy the entrance requirements of the Graduate College and the colleges of Medicine, Dentistry and Law.

Undergraduate curriculum

Freshman Year

1-1 Principles of Chemistry 1 3 s.h.
4-6 Elementary Chemistry Laboratory 2 s.h.
8-5 Literature and Composition I 4 s.h.
22M-35, 26 Engineering Mathematics I, II 10 s.h.
51-12 Introduction to Engineering Design I, II 4 s.h.
51-3, 4 Introduction to Engineering Graphics, Computation 4 s.h.
31 s.h.

Sophomore Year

4-6 Principles of Chemistry II 3 s.h.
22M-37, 38 Engineering Mathematics III, IV 8 s.h.
37-5 Principles of Animal Biology 5 s.h.
51-6 Thermodynamics I 4 s.h.
51-11, 12 Dynamic Systems Analysis I, II 6 s.h.
51-15 Materials Science I 3 s.h.
51-17 Mechanics of Solids 4 s.h.
53-31 Elementary Biomeengineering 3 s.h.
34 s.h.

Junior Year

4-12 Organic Chemistry I 3 s.h.
22B-39 Probability and Statistics for Engineering and Physical Sciences 3 s.h.
28-62 Physics I 3 s.h.
31-18 Mechanics of Fluids and Transfer Process 4 s.h.
51-21, 22 Principles of Design I, II 6 s.h.
51-25 Electromagnetic Theory 4 s.h.
72-13 Introduction to Human Physiology 4 s.h.
55-59 Socio-Humanistic Electives 6 s.h.
33 s.h.

Senior Year

Biomedical Design I, II 6 s.h.
Biomedical Electives 15 s.h.
Socio-Humanistic Electives 3 s.h.
30 s.h.

Total 128 s.h.
Chemical and Materials Engineering

Department Head: ISA C. Volkmann
Degree offered: B.S., M.S., Ph.D.

The chemical engineer is closely involved with the production of materials. These may be materials such as gasolines, which are used directly by consumers, or they may be materials used by manufacturers to make other products for use by consumers. Many problems in health-related areas, in environmental protection and in energy await solution by application of chemical engineering principles.

Undergraduate Program

The Bachelor of Science degree program in chemical engineering prepares the student for work in design, supervision, development or sales. The curriculum includes extensive training in chemistry, in addition to the basic engineering. Undergraduate students have the opportunity to work with faculty members and graduate students on significant problems.

Curriculum

Freshman Year

4.1, 4 Principles of Chemistry I, II 6
4.6 Elementary Chemistry Laboratory 2
8.5 Literature and Composition I 4
11.1-8 Literature 4
51.1, 2 Introduction to Engineering Design I, II 14
51.3, 4 Introduction to Engineering Graphics-Computation 4

Sophomore Year

4.12, 12 Organic Chemistry I, II 6
4.14 Intermediate Chemistry Laboratory I 2
22BM.37, 38 Mathematics III, IV 6
51.11, 12 Dynamic Systems Analysis I, II 6
51.17 Mechanics of Solids 4
51.12x Process Calculations 3
51.12z Sociocultural Electives 5

Junior Year

51.21 Principles of Design I 3
51.25 Electromagnetic Theory 4
51.18 Mechanics of Fluids and Transfer Processes 4
4.33, 132 Physical Chemistry I, II 6
4.143 Advanced Chemistry Laboratory I 3
29.82 Physics I 3
51.140 Design for Energy and Nucleus Transfer 4
51.160 Survey of Chemical Industry 1
Sociocultural Elective 5
58.81, 82 Profession Seminar 0

Senior Year

52.141 Mass Transfer Operations 3
52.145, 146 Unit Operations Laboratory I, II 4
52.150 Chemical Engineering Thermodynamics 3
52.154 Economics in Design 3
52.159 Structure of Materials 3
52.120 Chemical Reaction Kinetics 2
52.155 Chemical Engineering Process Design 3
Sociocultural Electives 6
Technical Elective 3

Total 128

Graduate Programs

The programs leading to the M.S. and Ph.D. are more flexible than the undergraduate program. The emphasis is on research, and graduates are employed in research and development of chemical manufacturing processes. About one-third of the program is devoted to a research project, and a thesis is required for each degree.

Research is currently being carried out in reaction kinetics, irreversible thermodynamics, rheology, transport phenomena, constitutive equations and biomedical engineering. More recently the Department has embarked on research in such interdisciplinary areas as chemomechanics, which involves the study of such phenomena as chemical engines, mechanics of living systems and stress corrosion, as well as radiation and aging effects in materials.

Research can be carried out during the summer session and the independent study session, and students in neighboring cities may take courses under the College of Engineering's Guided Self-Study plan.

In addition to fulfilling the general degree requirements outlined in the "Graduate College" section of this Catalog, a candidate will assist in teaching or faculty research during two or three semesters as part of the graduate training. Students wishing to do graduate studies in chemical engineering should write to the chairman of the Department.

Special Facilities

The Department's laboratories are located in the southeast section of the Chemistry-Botany Building. A large pilot-plant laboratory contains equipment for studies in fluid flow, heat transfer, absorption, distillation, extraction, drying, filtration and process control. The nuclear technology laboratory is equipped with a subcritical reactor and a reactor simulator. For graduate research, several individual laboratories are available and are equipped with gas chromatographs, analog computers and a variety of analytical equipment. An all-purpose laboratory is utilized for undergraduate research and special projects. Smaller laboratories are provided for biomaterials and plastics studies as well as for studies of mechanical properties. A separate laboratory is furnished with several desk calculators.

Faculty Roster

Professors Vaisan, Osburn, Hoving; professors emeritus Kammeyer, associate professor Yeter, assistant professor Teck; instructor Therman.

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Civil Engineering

Department Chairman: Harrison Kline
Degrees offered: B.S., M.S., Ph.D.

Undergraduate Program
Civil engineers are constructors, planners, designers, and often operating managers of large-scale facilities which are essential to modern life. Their projects include transportation systems to move masses of people and products, such as bridges, highways, public transit systems, railways, harbors, airports, seaports, and even spaceports; large-scale structures to provide enclosed working and living space, office buildings, skyscrapers, power plants and industrial buildings, environmental systems to provide clean water and air including filtration plants and distribution systems for municipal and industrial water supplies, waste water treatment plants, dams, levees and irrigation systems.

In fact, if something is one of a kind, large and important in the daily lives of a great many people, the chances are it was planned, designed and constructed by civil engineers.

The continuing need for these kinds of projects accounts for the steady demand for civil engineers through both good and bad economic times, and the variety of tasks that the individual civil engineer is qualified to perform ensures flexibility and the capacity to adjust to shifting demands.

In planning and design, the civil engineer works with architects, landscape architects, planners, economists, financiers, sociologists, lawyers and other specialists as members of the design team. They do not only work in engineering offices; they are often called upon to construct or supervise the projects they have designed. These field assignments, many of which are in remote and fascinating parts of the world, are particularly appealing to many civil engineers.

Undergraduate Curriculum

Freshman Year

| 4-1 | Principles of Chemistry I | 3 |
| 4-6 | Elementary Chemistry Laboratory | 2 |
| 8-5 | Literature and Composition I | 4 |
| 11-1 | 8 | 4 |
| 22M,35 | Engineering Mathematics I, II | 10 |
| 51-1, 4 | Introduction to Engineering: Design I, II, Graphics, Computations | 8 |
| 51-8 | Statics | 2 |
| 33 |

Sophomore Year

| 22M,37,38 | Engineering Mathematics I, II, IV | 6 |
| 51-6 | Thermodynamics | 4 |
| 51-9 | Dynamics | 3 |
| 51-11, 12 | Dynamics Systems Analysis I, II | 6 |
| 51-15 | Materials Science I | 3 |
| 51-18 | Mechanics of Fluids and Transfer Processes | 4 |
| 51-19 | Mechanics of Deformable Bodies | 3 |
| 32 | Socioeconomic Electives | |

Junior Year

| 22S-39 | Probability and Statistics for Engineering and Physical Sciences | 3 |
| 28-92 | Physics I | 3 |
| 51-21, 22 | Principles of Design I, II | 6 |
| 51-25 | Electromagnetic Theory | 4 |
| 53-35 | Structural Analysis I | 4 |
| 53-41 | Civil Engineering Design I | 3 |
| 53-61 | Flow Systems in Environmental Engineering | 3 |
| 53-81, 82 | Professional Seminar | 6 |
| 53-161 | Principles of Environmental Engineering | 3 |
| 53-173, 174 | Transportation Engineering I, II | 6 |
| 32 | Socioeconomic Electives | |
Civil Engineering

Admission Requirements

The prerequisite for admission to candidacy for the master's degree is the holding 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 courses 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").

Financial Aid

A number of traineeships, assistantships or other forms of aid are available. Selection of recipients is usually based on scholastic achievement and research interest.

Faculty Roster

Professors Braune, Kane, McCauley, McDonald, Meyers, Paulson; associate professors O'Meara; assistant professors Fish- er, Tracy, Wilson; interdepartmental faculty (Preventive Medi- cine and Environmental Health) Berry, Long, Powell, McMullen.

Courses

Primarily for Undergraduates

5210 Surveying I 3 a.h.
Theory of measurements; sights and computations; mapping; route surveying; geodetic surveying; plane geometry and astronomy.

5212 Structural Analysis I 4 a.h.
Stress and strain; trusses and plane frameworks; influence lines; function- al frameworks; deflections by methods of virtual work; Castiglian's Theo- rem; moment-area, conjugate beam; analysis of statically indeterminate structures by methods of superposition and moment distribution. Prerequisite: Engineering 3101.

5211 Civil Engineering Design I 3 a.h.
Basic design and technical behavior of structural elements: design of reinforced concrete beams, slabs, columns: design of steel section members, compression members, beams, connections: application to design of structures. Prerequisite: Engineering 5119.

5213 Environmental Bio-Engineering 3 a.h.
Elements of basic biology, emphasis on application in problems in engineering.

5214 Fluid Systems in Environmental Engineering 3 a.h.
Application of hydraulic and hydrologic principles to analysis and design of water, wastewater, and stormwater systems, consideration of all aids and solids transport sys- tems. Prerequisite: 5118.

5215 Professional Seminar 0 a.h.
Lectures and discussions on topics of current interest in civil engineering, required of all seniors in civil engineering. Prerequisite: senior standing.

For Undergraduates and Graduates

52155 Technology and Society 3 a.h.
Survey of Engineering 52155 and American Civilizations 45110.

52170 Special Studies 0 a.h.
Design of investigations; problems selected by student subject to approval of staff.

52182 Men and His Environment 3 a.h.
Application of scientific and engineering principles to control of air-water-land environment for health and well-being of mankind. Subject matter includes air and water resources, solid waste management, environmental health, legal and com- mercial aspects.
Electrical Engineering

Department Chairman: Nat G. Yaman Degrees offered: B.S., M.S., Ph.D.

Undergraduate Program

The undergraduate program provides the basis for professional training in engineering, particularly that which deals with the electronics of instrumentation, communications systems, computers, and electric power generation and distribution. Electrical engineers are employed in space satellite, semiconductor, aircraft, radio, television, computer and power industries. With the B.S. in electrical engineering, the engineer is prepared to do engineering work in design, development, manufacturing, sales, market analysis, consulting, field service and management. The employment outlook for the foreseeable future is quite favorable.

To prepare the student for the electrical engineering profession, the curriculum provides a strong background in circuits, control systems, electronics, communication theory, electronics and design, and in addition to the basic engineering core of mathematics, engineering design, engineering science and humanities. Technical electives and advanced programs are offered in active and passive network synthesis, switching theory, and the design of digital systems, plasma physics, electro-magnetic theory, and stochastic systems and control theory.

Undergraduate Curriculum

Freshman Year

First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>8.5 Literature and Composition I</td>
<td>4</td>
</tr>
<tr>
<td>22M:33 Engineering Mathematics I</td>
<td>5</td>
</tr>
<tr>
<td>4.1 Principles of Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>51.1 Introduction to Engineering Design I</td>
<td>2</td>
</tr>
<tr>
<td>51.3 Introduction to Engineering Graphics</td>
<td>2</td>
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</tbody>
</table>

Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>22M:36 Engineering Mathematics II</td>
<td>5</td>
</tr>
<tr>
<td>4.6 Elementary Chemistry Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>51.2 Introduction to Engineering Design II</td>
<td>2</td>
</tr>
<tr>
<td>51.4 Introduction to Engineering Composites</td>
<td>2</td>
</tr>
<tr>
<td>51.5 Introduction to Engineering</td>
<td>2</td>
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</tbody>
</table>

Sophomore Year

First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>22M:37 Engineering Mathematics III</td>
<td>3</td>
</tr>
<tr>
<td>51.6 Thermodynamics I</td>
<td>4</td>
</tr>
<tr>
<td>51.15 Materials Science I</td>
<td>3</td>
</tr>
<tr>
<td>51.11 Dynamic Systems Analysis I</td>
<td>3</td>
</tr>
</tbody>
</table>

Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>22M:38 Engineering Mathematics IV</td>
<td>3</td>
</tr>
<tr>
<td>51.17 Mechanics of Solids</td>
<td>4</td>
</tr>
<tr>
<td>55.10 Logic and Digital Systems</td>
<td>3</td>
</tr>
<tr>
<td>51.11 Dynamic Systems Analysis II</td>
<td>3</td>
</tr>
</tbody>
</table>

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Junior Year

First Semester
- 51:25 Electromagnetic Theory 4
- 225:39 Probability and Statistics for Engineering and Physical Sciences 3
- 55:51 Principles of Electrical Engineering Design I 3
- 55:23 Electronic Circuits I 3
- 55:27 Communication Systems 3
- 55:80 Professional Seminar** 0
- Total 16

Second Semester
- 51:25 Electromagnetic Theory 4
- 298:32 Physics II 3
- 55:61 Principles of Electrical Engineering Design II 3
- 55:24 Electronic Circuits II 3
- 55:28 Control Systems 3
- 55:30 Professional Seminar 0
- Total 31

Senior Year

First Semester
- 298:33 Physics II 3
- 55:71 Principles of Electrical Engineering Design III 3
- 55:80 Professional Seminar 0
- Science Core Electives*** 3
- Technical Electives 5
- Total 17

Second Semester
- 55:30 Electrical Engineering Materials and Devices 3
- 55:81 Principles of Electrical Engineering Design II 3
- 55:80 Professional Seminar 0
- Technical Electives 8
- Total 34

TOTAL 128

**Socio-humanistic electives total 12 semester hours, including 6 s.h. historical-cultural and 6 s.h. social science.

***Professional Seminar may be taken four times but should be taken at least once in the junior year and once in the senior year.

****Science core electives
- 51:18 Mechanics of Fluids and Transfer Processes
- 51:19 Mechanics of Deformable Bodies
- 51:27 Engineering Management Science
- Biological Science Course

Graduate Programs

The Department offers programs leading to the Master of Science and Doctor of Philosophy degrees. Both thesis and non-thesis M.S. programs are available, and either may be followed by subsequent Ph.D. studies.

Excellence in scholarship and research is stimulated through close contact with the faculty throughout the period of graduate study. Most programs are tailored to fit individual needs. Each graduate student is regarded as an important member of the Department whose contributions are highly valued. Each student selects his own advisor, and together with the advisor plans his individual graduate program, with freedom of choice bounded only by a few broad guidelines imposed by the Graduate College and by the Department. Foreign languages and research tools, for example, are not required by either the Graduate College or by the Department but are introduced into the program by the student and his advisor to the extent that they are appropriate in light of the particular student's goals.

The Department recognizes the student's desire to complete his graduate program as promptly as possible without sacrifice of quality, and encourages him to proceed toward graduation at a pace as rapid as his ability permits.

The basic program, which is fundamental to 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 nearby cities to take courses while employed full-time. Research can be carried out by these students during the summer and through the independent study sessions.

In cooperation with the Quad Cities Graduate Study Center, the Department offers an extension program in electrical engineering in the Quad Cities area.

Admission Requirements

The normal graduate admittance requirement of the Department is at least 2.7 grade-point average on all courses in electrical engineering, mathematics and physics for M.S. students, 3.0 for Ph.D. students. As M.S. students 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 probation. Each application is reviewed on an individual basis. Extenuating circumstances may permit deviations from the normal standards.

Masters of Science

Both thesis and non-thesis 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 outside of 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 55:214 Recent Advances in Electrical Engineering are required in addition to the 12 semester hours in electrical engineering.

This independent study is to be a special project completed under the supervision of the student's program advisor.
The candidate for the master's degree in electrical engineering must also successfully complete a final examination which is conducted by a committee of at least three faculty members, of which the adviser is the chairman. One part of the final examination must consist of an oral defense of the thesis of the candidate or of the materials in 55:213 Recent Advances in Electrical Engineering for the non-thesis candidates.

Doctor of Philosophy

Requirements other than those stated in the University's graduate manual are:

- Selection of a program adviser and filing of a tentative plan of study with the Department during 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, trainships, assistantships, scholarships, and industrial grants are available to graduate students who qualify. These are awarded on a competitive basis.

Interest Areas and Facilities

Specialized studies and research within the Department are centered in the following areas: circuit theory, which includes linear and nonlinear analysis and synthesis, and computer-aided analysis, synthesis and design; control theory, both applied and theoretical, which includes classical and optimal control theory, linear and nonlinear system theory and real-time computer systems; and stochastic systems, which includes real-time computer systems, computer control and communication systems; digital systems, which includes switching theory, logical design, fault-tolerant computing; electronic theory, which includes basic linear and nonlinear propagation, and plasma physics; and physical electronics, which includes the study of thin-film diodes, transistors, solar cells, and scanning electron microscopy.

The strengths of the other departments and the flexibility of the graduate program are also utilized in fostering strong inter-disciplinary programs in areas such as bio-engineering, plasma physics, and computer science.

The Department is housed in a new wing of the Engineering Building. Facilities include modern well-equipped laboratories for studying control systems, communication systems, digital systems, electromechanical theory, plasma, physical electronic devices and thin-film techniques.

Faculty Roster

Professors: Choying, Etting, Haus, Lankinen, Robinson; professors emeriti Kark, Menzer, Ware; associate professors Alt- ton, Levy, Lob, Mailk, Reddy; assistant professor Soukop.

Courses

Primary for Undergraduates

5119 Logic and Digital Systems 3.0
- Introduction to logic of switching circuits; analysis and synthesis of combinational and sequential circuits; introduction to digital computer; computer organization and operation; study of microprocessors and devices; lab arranged; 3.0 credits; semester holding or consent of instructor.

5222 Electronic Circuits I 3.0
- Physics of solid state electronic devices; carrier motion in semiconductors; drift, diffusion, thermal and photomultiplication; recombination; junction devices; 0.5; introduction to linear and nonlinear circuit models; microscopic fabrication; design concepts involved in assembly construction; basic amplifiers and oscillators. Prerequisite: Math 111, 112.

5224 Electronic Circuits II 3.0
- Active circuit design based on device theory from 55:22; amplifier design, basic feedback and oscillator theory, including circuits and switching devices. Frequency applications of solid-state devices; electronic communication system design theory and philosophy; use of modern computer techniques in analysis and design. Prerequisite: Math 112, 113, Mathematics 22M:38.

55:27 Communication Systems 3.0
- Introduction to Fourier Series, as representation of signals in orthogonal signal space; ideas and use of convolution, transmission of signals, power and energy spectra; linear systems and filters; various complex functions, as needed: amplitude modulation, frequency modulation and pulse transmission. Prerequisite: Math 112, 113, Mathematics 22M:38.

55:28 Control Systems 3.0

55:30 Electrical Engineering Materials and Devices 3.0
- Introduction to fundamentals of electrical properties of materials, semiconductor electronics, electron physics, physics of semiconductors. Prerequisite: 55:19.

56.01 Principles of Electrical Engineering Design I 3.0

56:01 Principles of Electrical Engineering Design II 3.0

56:07 Principles of Electrical Engineering Design III 3.0

59.01 Principles of Electrical Engineering Design IV 3.0

59.07 Topics in Electrical Engineering 1-3
- Special topics in electrical engineering for undergraduates only. Permission: consent of instructor.

For Undergraduates and Graduates

56:13 Principles of Communication Engineering I 3.0
- Useful topics for practitioners designing digital communication systems; modern waveforms, optimal receiver principles, efficient signaling for message reception. Prerequisite: Math 111, 112.

59.15 Topics in Electrical Engineering 1-3
- Special topics in electrical engineering offered by arrangement with individual faculty members. Prerequisite: consent of instructor.

59.16 Lines and Integrated Circuits 3.0
- Substructures of linear integrated circuits; bonding, analysis, modeling, modes of operation and characterization of operational amplifiers, voltage amplifiers, phase locked loops and other IC devices including operational amplifiers, use of various negative feedback configurations and high frequency specification methods. Interconnections and communication systems; integrated circuits. Prerequisite: 55:24 or consent of instructor.

59.18 Control Systems Analysis 3.0
- Advanced feedback control systems; state variable formulations of mathematical models, use of control systems (55:22) review of state theory, linear, non-linear, state feedback, input state feedback, state space techniques. Same as Mechanical Engineering 55:19. Prerequisite: senior standing or consent of instructor.
Industrial and Management Engineering

SS252 Coding for Communication and Computation 3 s.h.
Use of coding techniques to improve reliability of communication and computer systems, error correcting codes, channel and sequential decoding, reliable communication in the presence of noise. Prerequisites: SS215 or SS210 or consent of instructor.

SS253 Principles of Communication Engineering II 3 s.h.
Continuation of SS213. Implementation of coded systems, channel models, waveforms communications. Prerequisite: SS213.

SS241 Research: Electrical Engineering (M.S. Thesis) 1-6 s.h.
Credit arranged from one to six semester hours.

SS252 Seminar: Communication Systems 3 s.h.
Selected topics in communication systems theory. Prerequisite: consent of instructor.

SS253 Seminar: Digital Computer Systems 1-5 s.h.
Discussion of recent advances in digital computer organization and design. Prerequisite: consent of instructor.

SS254 Seminar: Switching Theory 3-6 s.h.
Individual or group study of outstanding problems in switching theory. Prerequisite: consent of instructor.

SS250 Random Data Control Systems 3 s.h.
Unified treatment of digital and sampled data control systems with examples of design and synthesis. Same as Mechanical Engineering 58:260. Prerequisite: SS500.

SS250 Nonlinear Control Systems 3 s.h.
Same as Mechanical Engineering 58:261.

SS250 Optimal Control Systems 3 s.h.
Variational methods, calculus of variations, dynamic programming, maximum principle. Same as Mechanical Engineering 58:262. Prerequisite: SS500.

SS250 Stochastic Control Systems 3 s.h.
Probability theory and random variables, probability density functions, jointly distributed random variables, conditional probabilities and expectations; stochastic processes, including random differential equations, normal, Markov, other processes; optimal estimation theory including smoothing, filtering and prediction; and stochastic optimal control theory. Same as Mechanical Engineering 58:263. Prerequisite: consent of instructor.

SS250 Seminar: Control Systems arr.
Formal discussions of recent advances in control systems analysis and synthesis. Same as Mechanical Engineering 58:264. Prerequisite: consent of instructor.

Industrial and Management Engineering

Department Chairman: Harri L. Baehner
Degree offered: B.S., M.S., Ph.D.

The Industrial and management engineering is prepared to fill a variety of positions in private industrial, governmental, research, and educational public service organizations. Recent involve- ments of the faculty of the Department suggest the types of tasks tackled by industrial and management engineers. One example is the development of a complete 10-year optimal transportation network plan—air, sea, river, rail and highway systems—for a Latin American country; the plan is now operative. Major advances the faculty has taken leadership in developing optimal designs for congressional and other legislative reprogramming plans to provide true one-man-one-vote representation; developing a plan of occupational safety and health for the state of Iowa; and developing optimal procedures for the operation of manufacturing firms, hospitals and other health services.

Undergraduate Program

The general nature of industrial engineers' work is the design and implementation of productive systems involving optimal use of resources—human, material and financial. The systems involved may range from extremely large ones to small sub-sys- tems. In striving today and tomorrow for the conservation and improvement of this world's environment, the importance of such optimal systems design can hardly be overemphasized. The abilities of the industrial engineer therefore provide unique capa- bility for significant contribution to the welfare of the world.

Employment opportunities for the industrial engineer are among the most varied of any of the engineering fields. The in- dustrial 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 profes- sionals as a member of a team. The work may be for a manu- facturing firm, for a service company such as an airline, retail store, bank or hospital, or for a government agency. Because of his or her vital participation in management decisions, the in- dustrial engineer has many opportunities for advancement.

Undergraduate students become directly involved in the de- sign of real world systems. Recent upper-level student 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 re- quires a strong foundation in management science, mathematics, design and sociotechnical studies. Departmental electives in- clude operations research, statistics, computer science, econom- ics, materials processing and physical metallurgy.

Curriculum

Freshman Year

4/1 Principles of Chemistry I 3
4/6 Elementary Chemistry Laboratory 2
8.5 Literature and Composition 4
11/1-4 Languages: 4
23M/25, 26 Engineering Mathematics I, II 10
51/1, 2 Introduction to Engineering: Design I, II 2
51/3 Introduction to Engineering: Graphics 2
51/4 Introduction to Engineering: Computation 2

Sophomore Year

23M/37, 38 Engineering Mathematics III, IV 6
31/1 Elementary Physics 4
31/11, 12 Dynamic System Analysis I, II 6
51/15 Materials Science I 3
51/17 Mechanics of Solids 4
51/27 Engineering Management Science 3
56/24 Materials Processing I 3
56/28 Materials Science II 3

Junior Year

22C/117 Computing with PL/1 3
22S/39 Probability and Statistics for Engineering and Physical Sciences 3
29/82 Physics I 3
31/155 Human Factors 3
31/156 Psychology in Management 2
51/6 Thermodynamics I 4
51/21, 22 Principles of Design I, II 6
51/25 Electromagnetic Theory 4
56/40 Engineering Statistics 3
56/81, 82 Professional Seminar 3

29/82 Physics I 3
31/155 Human Factors 3
31/156 Psychology in Management 2
Industrial and Management Engineering

Senior Year
56:83, 84 Professional Seminar 1
56:141 Introduction to Operations Research 4
56:161 Design of Methods and Measurement Systems 4
Economics Elective 3
Science Core Elective 3
Technical Electives 9
Sociocultural Electives 6
Senior Design Elective 3
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Total 128

Strongly recommended sociocultural electives include:
31:1 Elementary Psychology
31:155 Human Engineering
31:156 Psychology in Management

Science core electives:
29:83 Physics I
51:18 Mechanics of Fluids and Transfer Processes
51:19 Mechanics of Deformable Bodies or a biological science course

Economics electives:
68:103 Managerial Economics
68:103 Microeconomics
68:111 Lab. Economics

Graduate Programs
The purpose of the industrial and management engineering graduate program 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 insurance, environmental improvement, teach 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.

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 Aptitude Test (minimum 450 Verbal, 650 Quantitative). Students may be considered for conditional admission with a 2.3 grade-point average. Students may also be considered for admission from biological or social science programs.

The minimum M.S. program requires 30 semester hours of coursework and research. Thesis and nonthesis programs are available. Most students 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 elementary matrix theory is helpful preparation. Complementary 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 on a minimum of 30 semester hours of graduate work.

The nature of the final examination will be specified by the examining committee. It may consist of both written and oral parts. The examination will explore further the student’s course preparation and 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 or 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 or 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 presentation of a dissertation proposal so that the comprehensive committee can evaluate the student's academic preparation in the light of the research to be performed.

Having satisfactorily completed this examination, the student is a full candidate for the Ph.D. and normally has only to complete and defend the dissertation.

Graduate study is centered in law or transportation can participate in special programs, which incorporate a number of legal and industrial engineering courses or a number of courses in transportation and industrial engineering.

Financial Aid
Financial support is available through a limited number of scholarships, fellowships, traineeships, loans and assistantships. Stipends vary from a tuition scholarship of $725 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 an assessment of the student’s potential contribution to the Department's program and to the profession.

Facilities
Laboratories of the Department of Industrial and Management Engineering include various human factors and materials testing 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.
<table>
<thead>
<tr>
<th>Year</th>
<th>Course</th>
<th>Title</th>
<th>Instructor(s)</th>
<th>Prerequisites</th>
<th>Credits</th>
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<tr>
<td>225:39</td>
<td>Probability and Statistics for Engineering and Physical Sciences</td>
<td>3</td>
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<tr>
<td>29:82</td>
<td>Physics I</td>
<td>0</td>
<td>0</td>
<td>3</td>
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<tr>
<td>51:21, 22</td>
<td>Principles of Design I, II</td>
<td>3</td>
<td>3</td>
<td>6</td>
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<tr>
<td>51:25</td>
<td>Electromagnetic Theory</td>
<td>4</td>
<td>0</td>
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<td>58:54</td>
<td>Experimental Engineering</td>
<td>4</td>
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<td>56:62</td>
<td>Thermodynamics II</td>
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<td>56:63</td>
<td>Sociomechanics Electives</td>
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### Graduate Program
Graduate programs leading to the Master of Science, both with and without thesis, and to the Doctor of Philosophy degrees are available to qualified students. General degree requirements are specified in the "Graduate College" section of this Catalog. No explicit requirements beyond those specified by the Graduate College are imposed by the Department in keeping with the belief that the student's program can best be developed individually within the framework of the College requirements. It is felt that both the appropriateness of the student's program and his or her depth of achievement in it are adequately ensured by the advisor and through a review by the examining committee. As soon as possible after admission, each student should select a Department faculty member who, by mutual agreement will serve as major advisor to the student. The major advisor will assist the student in planning all aspects of his or her graduate program and usually will serve as the research advisor.

The Department of Mechanical Engineering cooperates in interdisciplinary doctoral programs, including the Program in Applied Mathematical Sciences (see "Graduate College").

### Master of Science
The Master of Science degree with thesis requires a minimum of 30 semester hours of academic credit, including not more than eight semester hours of credit for thesis work. Completion of a thesis and satisfactory performance in a final oral examination are required. A Master of Science degree without thesis is also available but only to well-qualified students who have the approval of their faculty advisor.

### Doctor of Philosophy
The Doctor of Philosophy degree is granted primarily on the basis of achievement rather than on the accumulation of semester hours of credit. However, the degree candidate is normally expected to have completed three academic years of residence, or two years if he or she already holds a recognized 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 assistantships and scholarships are available to graduate students who qualify. Some are awarded on the basis of competitions, others are the results of appointments.

### Admission
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.

### Facilities
All undergraduates use the mechanical engineering laboratory in the 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 numerical computation. The College of Engineering shop is available to graduate students for special apparatus such as may be needed for graduate theses.

### Courses

#### 58:28 Control Systems
3 a.h. Introduction to linear feedback control systems; multivariable models; transfer functions; time and frequency domain analysis of system characteristics; stability; system modeling and identification; laboratory demonstrations with participation. Same as Electrical Engineering 52:28. Prerequisites: 51:13, Mathematics 5224-5225.

#### 58:63 Experimental Engineering
4 a.h. General principles of physical measurement; calibrations; measurement of error; static and dynamic performance of measuring system; laboratory experience involving measuring; thermal, acoustical, electrical phenomena; planning for experiments, including individual experimental projects. Prerequisites: 58:62 Thermodynamics II, 58:64 Analytical Mechanics II.

#### 58:64 Analytical Mechanics II
3 a.h. Kinematics of rigid bodies and rigid bodies in motion; general equations of motion; special equations of motion; solid; projective moving flocks; some applications. Prerequisites: 51:16, 58:79.

#### 58:79 Metrological Engineering Design I
4 a.h. Selection of design problems; emphasis on overall design approach developed in preceding work; the design review; selection and preliminary definition of design projects suitable for use as projects in Mechanical Engineering Design II. Prerequisites: senior status or consent of instructor.

#### 58:76 Mechanical Engineering Design II
4 a.h. Continuation of 58:79, primary effort devoted to completion of substantial design project. Prerequisites: 58:75 or consent of instructor.

#### 68:61 Professional Seminar
3 a.h. Seminar treatment of selected topics of current interest. Prerequisites: consent of instructor.
Mechanics and Hydraulics

Department Chairman: Keen RN
Department Coordinator: E. R. Khan

The Department of Mechanics and Hydraulics offers graduate programs preparing students for professional careers and further study in fluid mechanics, solid mechanics, hydraulic engineering, biomechanics and water resources and flow instrumentation, and conducts research to advance the state of knowledge in those disciplines identified above. The Department is strongly committed to the development of such interdisciplinary areas of great need and promise as biomechanics, optimal design and water resources.

The Department also cooperates in the interdisciplinary Program in Applied Mathematical Sciences (see "Graduate College").

The Department is associated with the Iowa Institute of Hydraulic Research, whose laboratory is world-renowned. The major staff members of the Institute are professors in the Department and devote about half-time to teaching. The Institute has unusually sophisticated instrumentation with strong emphasis on electronic observation and processing of data. The mechanics of various programs has good laboratory facilities, including equipment for measuring frequency and magnitude of load application, equipment for electronic observation, and photographic equipment, in addition to the usual testing machines.

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 adviser. 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 average of 3.0 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 20 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 for their cultural value. Ability to pass the examinations for the first year of a language is accepted in lieu of actual registration. 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 committee is appointed for each graduate student, with considerable attention to the student's wishes. Under Graduate College rule, the comprehensive examinations 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. A significant amount of research contract work relies on enlisting a large number of graduate students as research assistants.

Admission Requirements

Each departmental program is quite flexible, and students are admitted from all disciplines of engineering as well as the mathematical and physical sciences. An applicant for the master's degree program is expected to
Mechanics and Hydraulics

solutions of specific men or historical development of knowledge on specific top-
ics.

59-247 Stability of Structural Systems
59-247 Stability of Structural Systems
3-2-1 Hydraulics Design
Aerodynamics of hydraulic principles to design of structures.
59-233 Research: Mechanics, Hydraulics
Experimental and theoretical investigations of fluid motion, especially the motion of water in structural engineering.
59-236 Seminar: Mechanics, Hydraulics
5-1 Reports of research and special subjects by advanced students.
59-236 Seminar: Mechanics, Hydraulics
5-2 Research on mechanical and fluid motion, wave propagation, water problems.
59-231 Continuum Mechanics II
5-3 Foundation of general and theoretical basis of continuum mechanics, introduction to tensors, field function and notation of tensors, stress, strain, principle of Cauchy, basic principles of classical mechanics, general support of structural analysis.

4.1 Flow in a canal, development of wave motion, water waves, wave propagation, and understanding of wave mechanics.
59-250 Advanced Numerical Analysis

Partial differential equations by finite differences, finite elements and their characteristics, transition areas, numerical stability, convergence, consistency, boundary conditions, numerical techniques, emphasis on numerical problems, examples of finite differences, and understanding of the principles of wave mechanics.

59-250 Optimization of Structural Systems I

Field of optimization of systems theory applied to optimal structural design and other related design problems in mechanics of solids, dynamics, strength, displacement of internal forces, structural design methods developed, and optimization of structural design procedures.

59-246 Optimization of Structural Systems I

Continuation of 59-245 to further dimensional problems, optimization of structural and other related design problems in mechanics of solids, dynamics, strength, displacement of internal forces, structural design methods developed, and optimization of structural design procedures.

59-246 Optimization of Structural Systems II

Continuation of 59-245 to further dimensional problems, optimization of structural and other related design problems in mechanics of solids, dynamics, strength, displacement of internal forces, structural design methods developed, and optimization of structural design procedures. 

59-247 Stability of Structural Systems

Stability criteria, theory of buckling, bifurcation theory, variational methods, beams, plates, rigid frames, post buckling behavior, plastic buckling. Same as Civil Engineering 55-247. Prerequisites: 59-172 or consent of instructor.

59-248 Mechanics ofTranslatefilmTransportation

3-2-1 Hydraulics Design

Lessons giving full breadth, applications in periodic motion analysis, impulse moment, load, load, suspended load, natural river processes, theory and practice of variable-speed centrifugal pumps.

59-250 Environmental Dispersion Processes

3-2-1 Hydraulics Design

Methods of classical dispersion theory, description of dissolved and particulate mater-

in open channel flows, selected topics including mechanisms of ingestion and thermal pollution. Prerequisites: 59-173 or equivalent.

59-251 Wave Mechanics

3-2-1 Hydraulics Design

Analysis of wave movement phenomena in continuous media, engineering appli-
cations. Prerequisites: 59-190 or consent of instructor.

59-232 Surface Waves in Fluids

Theory of interfacial and shallow-water waves; higher-order theories, Kelvin, Coriolis, gravity waves, wave solutions and other methods of approximation, solutions of special boundary problems, direction of waves, flow above submerged bodies, waves in bounded bodies, initial-value problems.

59-253 Coastal Hydraulics

3-2-1 Hydraulics Design

Wave, wave, tide, water, the movement of coastal structures, safety factors in the movement of coastal structures, wave propagation, and understanding of wave mechanics.

59-254 Wave Diffraction and Reflection

3-2-1 Hydraulics Design

General theory of this study; wave theory, wave transformation analysis of cylindrical shells and materials of revolution. Prerequisites: 59-195.

59-256 Theory of Shells

3-2-1 Hydraulics Design

General theory of this study; wave reflection, wave transformation analysis of cylindrical shells and materials of revolution. Prerequisites: 59-195.

59-257 Theory of Plasticity

3-2-1 Hydraulics Design

Constitutive equations of plasticity, boundary value problems, topology, general theory of plane stress, finite analysis, and continuum principles. Same as Chemical and Materials Engineering 55-275. Prerequisites: 59-173 or equivalent.

59-256 Wave Diffraction and Reflection

3-2-1 Hydraulics Design

General theory of this study; wave theory, wave transformation analysis of cylindrical shells and materials of revolution. Prerequisites: 59-195.

59-254 Wave Diffraction and Reflection

3-2-1 Hydraulics Design

General theory of this study; wave theory, wave transformation analysis of cylindrical shells and materials of revolution. Prerequisites: 59-195.

* The regular course carries the minimum credit indicated. Advanced students may earn additional credit in this section up to the indicated maximum.
Administrative Staff

Dean: Dianne C. Splinterbach
Dean for Advanced Studies: Frank E. Horton
Associate Dean: James F. Jakubowicz, Charles M. Mason
Graduate Examiners: Sally C. Stanley

Members of the Graduate Council: C. Roger Chisholm (Biochemistry), Lara Davis (Political Science), Doe A. Erickson (History), James J. McCue (Religion), William R. Savage (Physics), Mont S. Lee, Anthony F. Stolte, (Business Administration), Arnold B. Small (Business Administration), Michael A. Rotondi (Math), George R. Trainer (Graduate Student Senate), Anna Kish (Graduate Student Senate), Edward A. Mott (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 enrollments is in the Graduate College. This unusually high ratio reflects the tradition 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. A 12-member Graduate Council, elected from and by the graduate faculty and the Graduate Student Senate, 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 Public Administration, Master of Teaching and Master of Comparative Law degrees; the two-year degree, Master of Fine Arts, Educational Specialist and Masters 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.1

American Civilization—M.A.1, Ph.D.

Anatomy—M.S., Ph.D.

Anthropology—M.A., Ph.D.

Applied Mathematical Science—Ph.D.

Art—M.A., M.F.A.

Art History—M.A., Ph.D.

Asian Civilization—M.A.

Astronomy—M.S.

Biotechnology—M.S., Ph.D.

Biological Ecology—M.S.

Biophysics—M.S., Ph.D.

Business Administration (Department)—M.A.

Business Administration (interdepartmental)—M.B.A.1, 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.

Civil Engineering—M.S., Ph.D.

Classics—M.A., Ph.D.

Community Dentistry—M.L.

Comparative Law-M.C.L.1

Comparative Literature—M.A., Ph.D.

Computer Science—M.S., Ph.D.

Cultural Anthropology and Linguistics—Ph.D.

Dental Hygiene—M.S.

Dentistry—M.D., M.S., M.A., M.F.A., Ph.D.

Dentistry—M.D., M.S., M.A., M.F.A., Ph.D.

Electrical Engineering—M.S., Ph.D.

English—M.A., M.F.A., Ph.D.

Environmental Engineering—M.S., Ph.D.

Food Technology—M.S.

Geography—M.A., Ph.D.

Geology—M.S., Ph.D.

Geosciences—M.A., Ph.D.

Government—M.A., Ph.D.

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.

Law—M.A.

Law Enforcement and Correction—M.A.

Library Science—M.A.

Librarianship—M.A.

Lincoln—M.A.

Lincoln Community—Ph.D.

Mathematics—M.S., Ph.D.

Mathematics—M.S., Ph.D.

Mathematics and Statistics—M.S., Ph.D.

Mathematics—M.S., Ph.D.

Mechanical Engineering—Ph.D.

Mechanical Engineering—Ph.D.

Mechanical Engineering—M.S., Ph.D.

Mechanical Engineering—M.S., Ph.D.

Medical Education—M.A., M.F.A., D.M.A., Ph.D.

Medical Science and Technology—M.S.

Nursing—M.A.

Nutrition—M.S., Ph.D.

Occupational Therapy—M.S.

Operative Dentistry and Endodontics—M.S.

Pharmacy—M.S.

Pharmacology—M.S.

Optometry—M.S.

Ophthalmology—M.S.

Pathology—M.S.

Pediatrics—M.S.

Physiology—M.S.

Physical Education—M.S.

Physical Therapy—M.S.

Physiological Psychology—M.S.

Physics—M.S., Ph.D.

Psychology—M.A., Ph.D.

Public Administration—M.A.

Public Health Administration—M.A., Ph.D.

Public Health—M.P.H.

Psychology—M.S., Ph.D.

Radiology—M.S.

Radiological Technology—M.S.

Religious Education—M.A., Ph.D.

Religious Studies—M.A., Ph.D.

Russian—M.A., Ph.D.

Sociology—M.S., Ph.D.

Social Science and Technology—M.S.

Sociology—M.S., Ph.D.

Speech—M.A., Ph.D.

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Surgical Science—M.S.

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Surgical Science—M.S.

Surgical Science—M.S.

Surgical Science—M.S.

Surgical Science—M.S.
Oncology—M.S.
Pathology—M.D., Ph.D.
Pediatrics—M.S.
Pharmacology—M.S., Ph.D.
Pharmacy—M.A., Ph.D.
Physiology—M.A., Ph.D.
Physical Education (Men)—M.A., Ph.D.
Physical Education (Women)—M.A., Ph.D.
Political Science—M.A., Ph.D.
Psychology—M.A., Ph.D.
Psychopathology and Biometrics—M.S., Ph.D.
Psychiatry—M.D., Ph.D.
Radiation Biology—M.S., Ph.D.
Recreation Education—M.A.
Renal Physiology—M.S.
Religion—M.A., Ph.D.
Russian—M.A.
Science Education Program—M.S., Ph.D.
Social Studies—M.A.
Social Work—M.S., Ph.D.
Sociology—M.A., Ph.D.
Spanish—M.A., Ph.D.
Speech—M.A., Ph.D.
Speech Pathology and Audiology—M.A., Ph.D.
Statistics—M.S., Ph.D.
Urban and Regional Planning—M.A., M.S.
Zoology—M.S., Ph.D.

* Degrees offer both program with thesis and a non-thesis program without thesis.
* Two-year program.
* Two-year or three-year program.
* Student entry temporarily suspended.
* Student entry into Ph.D. program temporarily suspended.

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 Assistships" in "Rules and Regulations of the Graduate College."

These are the primary sources of assistance:

Teaching and Research Assistantships

A available in most departments; stipends range between $3,150 and $3,750 for half-time assistants; assistants are also eligible for tuition scholarships; nonresident assistants' one-quarter time or more) tuition and fees are reduced to resident rates.

University Teaching-Research Fellowships

For 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.

EPDA Part-time Fellowships, College-Teacher Program

Designed for graduate college-community college instructors; provides 12-month stipend of $2,400 for the first year and $2,600 for the second year, plus full tuition and $500 annually for each qualified dependent.

The provisions are subject to change.

Other Sources

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 1. Admission to the Graduate College

A. Application Procedure

All students seeking register for the first time in the Graduate College of The University of Iowa must submit a formal admission statement from the Director of Admissions. Applicants must obtain the proper forms from the Director of Admissions. The University of Iowa, Iowa City, Iowa 52242.

In addition to these forms, the official transcripts from 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 the second-semester enrollment or May 1 for summer-session enrollment.

8. Graduate Record Examination

All applicants prior to consideration for admission should take the Aptitude Test of the Graduate Record Examination (GRE) or, for applicants to graduate programs in business administration, the Admission Test for Graduate Study in Business (ATGBS). Applicants for whom admission data are complete, with the exception of scores on the GRE or the ATGBS, may
be admitted if they meet all other requirements. The GRE, or the ACT/SAT, must be taken within one semester after registra-
tion. The test is given several times a year at test centers estab-
lished under the direction of Educational Testing Service, Princeton, New Jersey. The judgment of acceptable levels of performance on this test and its weight in the decision on ad-
mission of a student is left to the departments. Some depart-
ments in fields where GRE Advanced Tests are available require these in addition to the Aptitude Test. Inquiries about the Apti-
tude Test may be directed to University Evaluation and Examina-
tion Service; and inquiries about the requirement of the Ad-
vanced Test should be addressed to the executive of the depart-
ment in which the applicant is interested.

C. English for Foreign Students
Prior to consideration for admission, foreign student applicants whose native language is other than English must take and pass TOEFL (Test of English as a Foreign Language), unless they have received a degree from an accredited college or university in the United States, the United Kingdom, Canada (except Que-
bec), Australia or New Zealand. The examination is given at various times of the year and 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 univelsity 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 con-

dering for admission.

The Graduate College will advise the deparments of those students hastily passing the TOEFL test. Individual departments may require such students to take and pass a course at The Uni-


der an English course 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 condition-


tional admission.

E. Candidacy
Admission to the Graduate College is not the equivalent of ac-


ceptance 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 whether 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 excep-
tions to this regulation are the limited number of applicants registered as "special students." (See definition of "special stu-
dent." 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 pro-


posed. 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 require-
ments for admission and who have been accepted by a depart-
ment, or interdepartmental degree program, for work leading to a graduate degree or certificate or stated professional goal.


2. Conditional—Students who are interested in working to-
ward a graduate degree or certificate but who are required by a department to demonstrate their ability to do satisfactory gradu-
ate 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.B."). The student on conditional status must achieve regular status within two sessions of registration in the Graduate Col-
lege by attaining a grade-point average of at least 2.50 and ac-
cepting 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 de-
gree or certificate. These students, relatively few in number, must obtain special permission to register from the Director of Admissions. 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 2.5 grade-point average may register for only 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 de-
corator 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 ad-
mitted to regular or conditional status.

H. Minimum Requirements for Admission
Graduates of any college or university accredited by recognized ac-


crediting associations may be admitted to the Graduate College, if their academic records meet the required standards. At the major's level, a minimum grade-point average of 2.5 is re-
quired 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, the Graduate Rec-


order Examination score above a point to be designated by the University or his or her papers shall be submitted to the de-
partment 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 overall 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, on occasions, set higher minimum ad-


mission requirements than those set forth above for the University as a whole. Information concerning departmental or program requirements may be obtained directly from the executive of the department concerned.

For State Board of Regents’ formal admission requirements, see “Appendix” of the Catalog.

I. Admission of Faculty Members to Graduate Study

Persons who hold faculty rank of assistant professor (including clinical assistant professor) or above at The University of Iowa may be admitted as special students. (See “Section G” above.) A person holding faculty rank as specified above may petition the Graduate Dean for permission to enter a departmental program for work leading to an advanced degree, certificate, or stated professional goal, except in the department of his or her appointment or closely related departments. Such petitions must have prior approval of the department of appointment, class of the college of appointment, the department in which study is to be pursued and the Graduate Council.

Section II. Registration

A. Standard Schedule

Students registered in the 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 semester hours in the regular session constitute full-time registration. (Fellows are required to carry at least nine semester hours during a semester as a condition of their appointments.) 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. Changes 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, by permission of the instructor. The number of courses a graduate student may take for limited or no credit is subject to the consent of the adviser and approval of the Dean of the Graduate College.

D. Reduced Schedules for Teaching and Research Assistants and Other Appointees

1. One-half-time appointees may register for not more than 12 semester hours during a semester or six semester hours during the eight-week summer session.

2. Five-eighths-time appointees may register for not more than 10 semester hours during a semester or five semester hours during the eight-week summer session.

3. Two-thirds- and three-quarter-time appointees may register for not more than nine semester hours during a semester or five semester hours during the eight-week summer session.

4. Seven-eighths-time appointees may register for not more than seven semester hours during a semester or four semester hours during the eight-week summer session.

5. Full-time appointees, including full-time instructors, may register for not more than six semester hours during a semester or three semester hours during the eight-week summer session.

E. Retroactive Registration

No form of retroactive registration is permitted.

F. Registration for Part of a Semester

A graduate student may register at any time during the semester or the summer session for not more than one semester hour of credit for each of the remaining weeks of classes (not including the examination period) in the term. The total registration may not exceed the 15 semester hours permitted for a semester and the eight semester hours permitted for a summer session. Registration 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.

G. Extra-university Registration

After admission to the Graduate College, 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”).

6. As many as nine semester hours of graduate work taken at the Quad-City 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.

Extra-university registration does not count toward residence credit in the following circumstances:

1. Coursework transferred from another institution;

2. Correspondence courses.

H. Extra-university Fees and Privileges

Students registered for extra-university courses for graduate residence credit must apply for admission to regular status (see “Section I.G.”) and pay established fees. (See “Section XII.K” for special fees applicable to non-residence registration, which should not be confused with extra-university registration for residence credit.)
Graduate College

1. Correspondence Courses

Correspondence study credits do not count as residence credits. Credit for correspondence study must be earned prior to a student's acceptance as a degree candidate at The University of Iowa may be earned 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.

2. System of Course Numbers

Courses designed 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.

3. Auditing of Courses

In special cases, and upon the recommendation of the instructor and the advisor, 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.

4. 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 student registration is cancelled. This regulation may be waived only by the Graduate Dean on the recommendation of the Student Health director or the Graduate 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 register.

Section 19. Traveling Scholar Program

A. Purpose

The program under the auspices of the Committee on Intercollegiate Cooperation representing 11 universities in the Midwest will enable a doctorial 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 advisor, who will approach an appropriate faculty member at the possible host institution in stipulated to a visiting arrangement.

2. After agreement by the student's advisor and the faculty member at the host institution, graduate dean at both institutions will be fully informed by the advisor 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.

C. Conditions

CIC Traveling Scholars will normally be limited to one semester or two quarters on another campus. Each university retains its full right to accept or reject any student who wishes to study under its auspices.

Section IV. Academic Standing, Probation and Dismissal

A. Master's, Specialist or Certificate Students

A student on regular status shall be placed on probation if, after completing eight semester hours of graduate work, his or her cumulative grade-point average on graduate work done at The University of Iowa falls below 2.50. If, after completing eight more semester hours of graduate work at this University, his or her grade-point average remains below 2.50, he or she shall be denied permission to register; otherwise, the student shall be restored to good standing.

B. Doctoral Students

For a doctoral student the minimum required grade-point average on graduate work at The University of Iowa is 2.70. A doctoral student whose performance falls below this level will be placed on 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 and denied permission to register unless he or she applies and is accepted for another degree or certificate program. If the condition of probation is met, the student is reinstated to good standing.

C. Rejection on Students on Probation

A student on probation shall not be permitted to take comprehensive or final examinations leading to any degree or certificate, nor may the student receive any graduate degree or certificate.

D. Departmental Regulations and Dissemination of Information

In addition to the above University-wide requirements, departments may establish further requirements which then determine the individual student's standing with regard to probation and dismissal. To this end, each department or program shall compile a written list of standards and procedures for work in that area. These documents shall be on file in each departmental office and the office of the Graduate Dean. Copies are to be available for students in the departmental office, and departments shall make all reasonable efforts to inform students. Subsequent changes in standards or procedures shall be communicated by the department to each student and the Graduate Dean. Whenever departments review standards for a given program, the new regulations will not apply retroactively to the disadvantage of those already in the program. In addition to notifying students that they are subject to the rules of the Graduate College as set
forth in the Manual of Rules and Regulations, any standards es-

established by the department more stringent than the general

Graduate College requirements shall be stated. Information shall

be provided outlining required courses applicable to the various

departmental programs of study, examination procedures, and

other formal evaluations, departmental policies with regard to

awarding and renewing assistantships, time limits or programs

of study, departmental registration policies, departmental grade-

point requirements, requirements for changing from one degree

program to another within the department, especially from the

master’s to the Ph.D., departmental probation and dismissal, poli-

cies and procedures (see E following), and with other matters

as appropriate. The nature of the departmental advisory sys-

tem shall be explained to the incoming students.

E. Academic Progress, Departmental Probation and Dismissal

Procedures

If a student is failing in departmental standards, the de-

partment shall warn the student of this fact in writing. The noti-

fication shall specify in what way(s) the student is failing to

meet the standards. The student shall be provided a reasonable

amount of time to meet the standards prior to departmental dis-

missal. If, in the judgment of a student’s progress, conditions

such as conditional admission or probation are imposed, the de-

partment shall give at the time of imposition written explana-

tion of this status and its time limits.

A student who will not be permitted to register for failure to

meet standards shall be notified of this fact in writing with

reasons for the action provided. Such dismissal may follow fail-

ure to meet conditions of admission, conditions of probation,

pre-announced departmental grade-point requirements or other

standards, or failure of a regularly scheduled examination or

formal evaluation. If a student judges the dismissal decision

improper, the student has a right to review. Each department

shall establish procedures for handling such reviews. The proce-

dures are to be approved by the Graduate Dean, and shall afford

a fair and expeditious review. A description of these procedures

shall be included in the departmental regulations described above.

(See “Section V.D.”)

F. Graduate College Review of Departmental

Dismissal

Questions involving judgment of performance will not be re-

viewed beyond the department level. However, the student feels

there has been unfairness or some procedural irregularity

coloring dismissal, the student may request a review by the

Graduate College. This review may be conducted by the Gradu-

ate Dean alone or the Dean may appoint a Graduate College

committee consisting of both student and faculty members to

conduct the review and recommend to the Dean possible courses

of action. The review by the Graduate College is final.

Section V. Credits

A. Transfer of Graduate Credit

Graduate students who wish to enter the stu-

dent’s permanent record by the Registrar and a report of this ac-

tion will be sent to the student, his or her major department

and the Dean of the Graduate College. Credit for these courses to-

ward 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’ Uni-

versity may be counted as residence credit in this institution, provi-

ded 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 “Section 2.D.” and “XI.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 re-

search an instructor may report less credit than the number of

semester hours for which a student is registered.

D. Graduate Credit for Veterans

Credit may be granted for studies pursued in war and military

situations under such regulations as may be formulated by the

national educational agencies and under such adaptations of

standing rules as the Graduate Council may authorize from time
to time to meet group or individual situations. The value of

such credit in satisfying requirements for a degree will be deter-

mined 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 peri-

ods: (a) instructors report grades only as Pass or Fail; (b) credit is

to be assigned on the basis of total registration minus thesis and

seminar; (c) courses are to be counted toward specific degree

requirements only after student returns and then only with the

department’s approval.

5. Students who complete the tenth week receive full cred-

it.

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 awarding 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 audit, because of 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 internships, research or independent study, the S/U grades may be applied. (See next paragraph, “R.”) Students who receive the mark of I must remove that mark within the first session of registration after the closing date of the session for which it is given, or else the grade becomes F, except that students with F’s from the spring semester are exempt from completing the course during the succeeding summer session.

Specific deadlines for the submission of student work to the faculty and for the faculty’s report on I grades to the Registrar will be set by the Graduate Dean for each session and printed in the academic calendar. Courses may not be repeated to remove incompletes; 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 average. 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, for the particular student or experimental nature, are judged to be more appropriate for such grading. In general, these requests may be granted for no more than one semester and must be reviewed by the Graduate Council before being granted for longer periods. The type of grading system to be used in the above cases should always be mutually understood by the instructor and student.

F. Grades of S and U

S and U may be used for courses taken by a graduate student outside the major department or interdepartmental degree program provided that the instructor of the course and the student’s departmental advisor approve the registration. Assignments 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 the semester or the final 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.

It is not the policy of the Graduate College to abandon the traditional letter grades described in this section; however, in certain exceptional instances, departments having several areas of concentration involving widely differing types of effort may request the Graduate Council for permission to allow students majoring in one area to register in courses in another area with-

in the same department or program on an S/U basis. In these in-

stances, S/U cards will be used as described in the preceding paragraph.

G. Computed Grade-Point Average

This is based only upon graduate work graded A, B, C, D and 

F. (A=4, B=3, C=2, D=1, F=0.)

Section VII. Graduate Appointments

A. Scholarships

Scholarships are competitive and are awarded on merit.

1. Eligibility for graduate scholarships and fellowships will include: (a) registration in the Graduate College; (b) cumulative grade-point average of at least 3.0; (c) a GRE score or an ATGSB score above a point to be designated by the Graduate Dean; and (d) a satisfactory rate of progress in completing the program for the degree.

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 ex-

ceed the comprehensive fee assessed. Scholarships will be cred-

ited to the student’s University account.

B. Graduate College Fellowships

Fellowships are awarded by the Graduate College upon recommenda-

tion by departments to students with outstanding academ-
ic 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 com-

plete the degree. Other terms of the award will be established by the Graduate Dean in consultation with the Graduate Coun-

cil.

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 pro-

vide 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 ser-

vice is scaled 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. Stu-

dents vary with the qualifications of the appointee and the amount of service rendered. Faculty research assistants appointed by the Graduate College may their own fees. Graduate ap-

pointments beginning in September are usually made by the Graduate Dean upon recommendations of the various depart-

ments in March of each year, although applications may be con-

sidered at any time. Applications should be made on the form provided by the Graduate College, and should be accompanied by recommendations and/or a letter summarizing the student’s qualifications.
D. Graduate Assistantships
These assistantships serve two purposes: (a) assistance in the in-
structional program of the University and (b) the preparation of
future college teachers. In order to achieve both aims, scholasti-
cally-qualified graduate students who show exceptional promise
as teachers are selected for graduate assistantships. All appoint-
ments are made by the dean of the appropriate college on rec-
ommendation of the department.

E. Eligibility for Scholarships, Fellowships and Research assist-
antships
Scholars, fellows and faculty research assistants in the Graduate
College budget must be registered as regular students in good
standing in order to hold such appointments. Appointments will
be terminated when registration and/or student status is termi-
nated. In no instance may a student be promised or rendered an
appointment until after approval for admission to the Graduate
College by the Director of Admissions.

F. Dismissal of Assistant
A uniform policy defining procedures to be followed in the dis-
nisal 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 Assistantships and Roadwork 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 ser-
vice 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 Financial Aid. See "Scholarships and
Loans" in a section of the Catalog.

J. Other Forms of Support
Many departments offer financial assistance in the form of train-
eeships, part-time employment on research programs or part-
time teaching. Inquiries should be addressed directly to the de-
partment.

Section VIII. Advanced Programs Offered in the Graduate Col-
lege
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 in which the degree will be conferred. The student must have the
application signed by his or her adviser. Failure to file the ap-
lication by that date will result in postponement of graduation in a sub-
sequent graduation.

B. Enrollment in Final Semester
The student must be enrolled during the session in which the
degree is to be conferred, except as noted in the following para-
graph. Students who must register for the session in which the
degree is to be conferred but are away from the University cam-
pus during that session may seek this requirement by registering for
independent study, research or thesis according to the prac-
tice in the various departments. Doctoral candidates who have
completed all work except the final examination may register for
the postcomprehensive examination described in "Section XII.
I.," if such registration is appropriate. Master's candidates who
have completed all work except the final examination may reg-
ister for a fee equivalent to the "postcomprehensive registra-
tion." Registration in a correspondence course will not satisfy
this requirement.

Students completing all requirements (excluding the final ex-
amination and thesis defense) for a graduate degree while en-
rolled in the Independent Study Sessions may receive their
degree in the following session without additional registration.

Section X. Master's Degrees
A. Kind 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 ap-
proved by the Graduate faculty.

B. Plan of Study
The applicant for a master's degree must file a plan of study ap-
proved by the advisor and the departmental Executive with the
Graduate College within the session in which the degree is to be
granted and be a draft 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 de-
partments.

D. Residence Requirement
Of the minimum of 30 semester hours required for the degree,
at least 24 semester hours must be completed under the auspices
of The University of Iowa. After admission to the Graduate
College, various forms of extramural registration may qualify
toward fulfillment of this 24-hour residence requirement (see
"Section II. G. Extramural Registration."), in addition to regu-
lar on-campus registration. However, at least 8 semester hours
must be on-campus, except for those departmental programs
which ensure sufficient interaction between the student and the
graduate faculty and have received approval from the Graduate
Graduate College

Council and the Dean of the Graduate College for reduction of this on-campus requirement.

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 courses were taken after the student had satisfied the requirements for the bachelor's degree, or equivalent to the bachelor's degree at The University of Iowa. The work accepted from the professional college must be directly related to the student's major field of study in the Graduate College and be approved as a part of the plan of study by the student's 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 of this University by two master's degrees simultaneously or in succession requires the satisfaction of all requirements 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 preparation shall be charged in satisfying the 30-hour minimum requirements.

The thesis may be a scholarly study or an artistic production.

One copy of the thesis, in typed manuscript or print, must be presented to the Graduate College for a check of format before the thesis is returned. 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 graduation.

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 Committee.")

I. Master's Degree Without Thesis

A master's degree without thesis, consisting of at least 30 semester hours of graduate study, may be awarded upon the completion 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 examination, which, at the discretion of the major department, may be written or oral or both. Such an examination will not duplicate course examinations. It will be evaluated by the examining committee as satisfactory or unsatisfactory with two unsatisfactory votes making the committee report unsatisfactory. The report 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 these departments giving a general examination within a thesis examination, no later than the last day of the graduate examination period.

If the examining committee recommends a candidate who fails the examination, he presents himself or herself for reexamination but not sooner than the next regularly scheduled examination 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 committees for the master's degree consists of at least three members of the Graduate faculty, appointed by the Dean upon recommendation of the major department or program, at least two of whom are from the major department. 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, as at his or her discretion the Graduate Dean may add a member to the committee.

Section XI. Two-Year Degrees

A. Master of Fine Arts Degree

This degree is awarded for creative work in the visual arts, dramatic art, music, and literature. It is designed for students preparing themselves professionally in such fields as painting, design, mural decoration, sculpture, playwriting, acting, producing, stage design, musical performance, composition, instrumentation, 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 working toward the Master of Fine Arts degree, but the student must meet all requirements for each degree separately, with a minimum 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"; "J. Final Examination"; and "K. Examining Committee."
B. Specialist in Education Degree

This degree is granted upon completion of a prescribed twon-year postbaccalaureate program designed for students preparing themselves professionally in such fields as teaching, administration, supervision, and special services.

Of the minimum of 60 semester hours required for the degree, at least 24 semester hours must be completed in residence at this University of which 15 semester hours must be earned while the student is on campus within one 12-month period or during two summer sessions.

Twenty-eight of the 60 semester hours are prescribed in the area of specialization. The others are in cognate fields, supervised experience and elective. Four semester hours of research culminating in a written report.

Courses successfully completed 10 or more years prior to the final 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.

Other requirements and regulations applicable to the educational specialist degree are the same as prescribed for the one-year major's degree in "Section X.B. Plan of Study." "L. Major and Required Fields:" "F. Limit on Law, Medical or Dental Courses," "I. Final Examination," and "K. Examinining Committee."

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 minimum of 52 semester credit hours in graduate social work, including research requirement; and
3. A final comprehensive examination, written or oral or both, covering all work for the degree.

The requirement of 52 semester credit hours may be interpreted to mean that a student who can satisfy the faculty of the School that he has accomplished, in the junior and senior undergraduate years, the clear equivalent of part or parts of the graduate curriculum in social work may be permitted, upon recommendation of the faculty of the School, to qualify for the M.S.W. degree on less than 52 credit hours. In no case may a student qualify for the degree on less than 40 credit hours in graduate social work study.

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, coursework is combined with field practice in social agencies or social work departments. Since coursework and field practice are arranged sequentially, students who enter the School of Social Work only in September.

For other requirements, see "Section X.B. Plan of Study." "E. Reduction of Old Credits. The University awards two doctorates, the Doctor of Philosophy and the Doctor of Musical Arts. The doctorate is the highest degree awarded by the University. The Doctor of Philosophy degree indicates marked excellence in research or other creative work, and superior comprehension in the discipline. The Doctor of Musical Arts degree indicates marked excellence in performance and pedagogy.

C. Residence Requirement

The candidate must present evidence of having completed a satisfactory amount of graduate work in the subject prepared for investigation or, in the case of deficiency, must register for prerequisite courses.

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 and a rating of the changes or additions to be completed after the comprehensive examination.

E. Ad Hoc interdisciplinary Programs

A student may propose a proposal for an interdisciplinary course of study, including the plan for the comprehensive examination, under the sponsorship of at least three faculty members and the department most directly concerned, which shall be designated as the sponsoring department. Approval of such individual programs is granted by the Graduate Dean, who may add members to the student's supervising committee from other closely related departments. The degree will be awarded in the interdisciplinary field indicated in the proposal program and, parenthetically, the name of the sponsoring department.
F. Redaction of Old Credit

Courses taken 10 or more years prior to the comprehensive ex-
mamination that leads to the major of the major and related fields of study, including the title of research in which competence has been certified.

G. Limit on Professional Courses

Work taken by a student in the college of Law or in basic science courses in the colleges of Medicine or Dentistry, while he or she is enrolled for a professional degree, may be credited to a graduate program leading to a doctoral degree if is it taken af-
after the student has satisfied the requirements for a bachelor's de-
gree at this University. The work accepted from the professional college must be directly related to the student's major field of study in the Graduate College, and the plan of study must be approved by the student's advisor and the major department. Work completed while registered for a professional degree in law, medicine or dentistry will not be counted as part of the one academic year which may be spent in residence as a doctoral student on the campus of this University.

H. 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 doctoral degree for these candidates. The examining committee will file a report 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 for the doctoral degree without earning the master's degree as an intervening part.

I. Requirement in Foreign Languages

There is no Graduate-College-wide requirement in foreign lan-
guages. These 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 specific programs of each department. Departmental executive of the examinations Register for entering on the student's record. Specific requirements of departments may be changed upon the initiative of the departments.

J. Comprehensive Examination

The candidate must pass a comprehensive examination, consist-
ing of written or oral parts or both at the discretion of the major department. Admission to the comprehensive examination is granted upon the recommendation of the major department, the filing of the plan of study, and the approval of the dean of the Graduate College. A student must be registered in the University at the time of the comprehensive examination, which must be passed not later than the session prior to the session of gradu-

K. Postcomprehensive Registration

The student is required to register each semester after passing the comprehensive examination until the degree is awarded. If a student fails to register, he or she may not be readmitted to candidacy until he or she has submitted a new application which has been approved by his or her advisor, the departmental executive, and the Graduate College.

All registration should accurately reflect the amount and type of work undertaken, the use of University facilities, and the sequence of courses required. The Graduate Dean should register for the courses, research and thesis necessary to complete his plan of study as well as other work upon the candidate's request. When the registrations required for the plan of study are completed, the student may meet the remaining registration requirements by paying a special minimal fee (P.D. comprehensive registration) for any semester in which the department is in operation regardless of the fee charged for graduate study) and the student's advisor determine that he is not making significant use of University facilities (except library privileges) nor purchasing of course and laboratory facility. It is understood that no registration for a summer session is required when the student makes no use of University resources unless the student is taking a degree at the end of that session.
L. 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 gradu-

ation at which the degree is to be conferred and deposited there in final form 18 days before graduation.

Regulations regarding preparation of the dissertation copy shall be promulgated by the Dean of the Graduate College. Dis-

sertations will be microfilmed and thus made available on a per-

manent basis. An abstract of the dissertation, not to exceed 600

words of text, is to be deposited with the dissertation. The ab-

tract must be approved and signed by the dissertation adviser.

The abstract is published in the journal of Dissertation Ab-

stracts. One copy of the dissertation typescript is bound and la-

bled as the University Library.

If the dissertation is in some nonprint form (e.g., painting, stone, performance in music) the librarian in charge of these

will help the student and faculty adviser work out an appropriate method of preparing the accompanying manuscript; if such help

is needed. Once the manuscript is accepted, it is sealed 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.

M. Dissertation Fee

A nonrefundable dissertation fee is charged each candidate to cover the cost of the above processing of the dissertation and
abstract.

N. Final Examination

The work for the degree culminates in a final oral examination administered on campus. This examination should include: 1) a

critical inquiry into the purposes, methods and results of the in-

vestigation—not a mere recapitulation of the procedures fol-

lowed; 2) instructive questioning on areas of knowledge constraining 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 de-
termine his or her qualifications for taking the final examina-
tion. The procedures to be followed are the same as those for the
comprehensive examination. (See "XII. J. Comprehensive Examina-
tion.")

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 of-

fice not later than 48 hours after the date of the examination.

The final examination will be evaluated as satisfactory or unsat-
factory. Two unsatisfactory votes will make the committee re-
port unsatisfactory. In case of a report of unsatisfactory in the

final examination, the candidate may not proceed himself or her-

self for reexamination until the next semester. The examination

may be repeated once, at the option of the major depart-
ment.

O. Examining Committees

The comprehensive and final examinations are conducted by committees of no fewer than five members of the Graduate fac-
culty appointed by the Graduate Dean upon recommendation of the major department, except that committees may require the
Dean for permission to replace one of the five members of the
Graduate faculty by a recognized scholar of professional rank
from another academic institution. A member of the Graduate
faculty from outside the major department is included in the
comprehensive examination. For the final exami-
nation 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 committees, and at his or her discretion the Grad-
uate Dean may add a member to the committee.
Administrative Staff

Dean: Lawrence E. Blackman
Dean Emeritus: Mason Ladd
Associate Dean: James E. Maret
Assistant Dean Thomas C. Sassafra
Administrative Dean: Howard A. Porter

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 exploration, closer faculty involvement, 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, a perspective course, and a course in appellate advocacy. Before they graduate, all students must also take a second course in constitutional law. All other second-year and third-year courses are elective.

Students are encouraged to enroll in independent research with faculty members. Additionally, the College has instituted a two-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 the approval of the dean of Law.

The Joint Program

In addition to the 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 be counted toward the semester-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.

Applicants 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 in the 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

Regular classroom of the summer session will extend over 10 or 12 weeks, with most courses taught in two successive periods of five and one-half weeks each. Six to eight upperclass courses and three to four first-year courses are normally offered. Students who begin their law study with a summer term may complete it in two regular and three summer terms, instead of the usual three calendar years. The work given in the summer is the same in kind and amount as that given in the corresponding subjects in the regular term, and the completion of any course in the summer gives the student full credit toward a degree.

Graduation Requirements

Residence Requirements

To satisfy the residence requirements, a student must complete a minimum of either:

(1) six semesters of not less than 12 semester hours each; or
(2) five semesters of not less than 12 semester hours each plus two summer sessions of not less than four semester hours each; or
(3) four semesters of not less than 12 semester hours each plus three summer sessions of not less than six semester hours each.

Scholastic Requirements

Numerical grades may be translated into letter grades for purposes of comparison as follows:

A 90-100  A  90-100  A  90-100
B+ 87-89  B+  87-89  B+  87-89
B  80-86  B  80-86  B  80-86
C+  77-79  C+  77-79  C+  77-79
C  70-76  C  70-76  C  70-76
D+  67-69  D+  67-69  D+  67-69
D  60-66  D  60-66  D  60-66
E  0-59  E  0-59  E  0-59

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 restored to good standing 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: Very High Distinction—cumulative weighted average of 89.84; High Distinction—cumulative weighted average of 75 or more; With High Distinction—cumulative weighted average of 89.84; With Distinction—cumulative weighted average of 75.00.

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 Iowa Advocate
Written, edited and published by law students, The Iowa Advocate provides a vehicle for College news, editorials, expressions 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. Students may earn academic credit for some of these activities. Cooperating agencies include the Hawkeye Legal Services Society of Iowa City and the Cedar Rapids Legal Aid Society; students are also involved in habibas' corpus and civil projects at the Men's Reformatory in Anamosa, a habibas' corpus project at Port Madison State Penitentiary, an Iowa Civil Liberties Union intern project, 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.

Center for World Order Studies
The Center for World Order Studies (a project of The Stanley Foundation of Muscatine, Iowa) was established in June, 1972, at The University of Iowa as a Midwest center for education and research in the causes of and potential cures for existing and future world order problems, particularly those related to the use of military power across national boundaries. In cooperation with public and private schools, colleges and universities, and civic and business organizations throughout the country and especially in the Iowa-Midwest area, the major function of the Center is to promote increased understanding of these world order problems through curriculum innovation and revision, teacher training, conferences and workshops, simulation exercises, coffee seminar, publications, mass media activities, essay contests and scholarships, and other learning techniques.

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 Law; Phi Delta Phi and Phi Alpha Delta, national law fraternities; 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 disciplinary committees.

Facilities
The Law Building contains a library and air-conditioned classrooms. With its collection of approximately 190,000 bound volumes, the law library is an outstanding research facility. A broad open-stack policy makes it readily available to students. The Agricultural Law Center, created by the State Board of Education, is nationally and internationally known. It conducts legal-economic research with Iowa State University and the United States Department of Agriculture.

Fees and Expenses
In addition to regular tuition and fees, books and supplies average about $180 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 Catalog, the College offers research assistantships with substantial stipends. Assistantships are awarded to high-ranking upperclass students who have demonstrated ability for research and scholarship. About one-third of the student body have scholarships.

Placement
A wide variety of placement opportunities is available upon graduation from the College of Law. These include opportunities to work in government, as clerks to judges, in corporations and in private practice. In recent years approximately half of the graduating class have assumed positions in Iowa. Each year numerous law firms, corporations and government agencies visit the University to recruit students from the College of Law.

Admission
Preparatory 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 the program should include increased capacity for verbal comprehension and expression, increased understanding of human institutions and values, and increased facility of thought.

Admission Requirements
Students may enter the College of Law in the fall semester or summer term. Except for good cause shown, a prospective student must apply for admission by March 1 preceding the summer session or April 1 preceding the fall semester he or she wishes to enter.
The College must have received, by the deadline date, the ap-
plicant's Law School Data Assembly Service report and Law School Admission Test results. The announcement is responsible for
having all of its or her college transcripts sent to the Law
School Data Assembly Service, located in Princeton, New Jer-
sy. The Law School Admission Test is administered by the Ed-

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son Testing Service, also located in Princeton.

To be considered for admission to the College of Law, the
applicant must have attained at least a 3.0 cumulative grade-
point average on all college work undertaken. The applicant
must present a baccalaureate degree from an approved college or
university before beginning work in the College of Law.

A $10 application fee must accompany applications from pro-
spective students not completing their undergraduate study at
Residence in the University of Iowa.

Completion of the specific requirements for admission listed
above does not ensure admission to the College of Law. From
applicants meeting the minimum requirements, the admissions
committee of the College will select those who appear to be
best qualified for the study and practice of law. The admissions
committee may require personal interviews with applicants.

The College participates in the University's Educational Op-
opportunity Program and gives individual consideration to appi-
cants from disadvantaged backgrounds.

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 with-
drawal (evidenced by a letter from the dean of the school from
which he or she is transferring), meets the admission require-
ments for entering students at this school and has done substi-
tially above average work in the law school he or she attended.
No more than 30 semester hours of resident credit may be
trans-
ferrable, and no more than 25 semester hours of 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.

Advance Deposit

Accepted applicants are required to make an advance deposit of $50 by April 1. Applicants who are accepted af-

ter April 1 must make the deposit within two weeks after being notified of favorable action on their applications. For those that
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 $50
fee will be refunded if an applicant cancels because of cir-
stances beyond the student's control. A student who is ad-
mitted but is forced to give up his place in the class because of
a service obligation will similarly be refunded upon timely
application at the conclusion of his service.

Physical Report

Accepted applicants who are new to The University of Iowa
must submit a satisfactory physical examination report to the
University Student Health Service.

Faculty Roster

Professor Baldus, Buyn, Bergesen, Blizer, Bonfield, Boyd,
Buss, Davison, Dolis, Ellis, Fahr, Hillen, Marks, Neuhacker,
Vonart, Vonart, Weston, Widner; professor emeritus Updgraff;
associate professors Glitter, Karr, Meyer, Pelckis, Sase,
Schantz, Wallace, Ward; assistant professor Bechta, Bivison,
Chime, Hiebert; lecturers A. Leff, P. Leff, Merl, Noyes, Pickens,
Stick. Tucker.

Courses

91:104 Civil Procedure 5 s.h.
After a brief examination of pleadings, the course deals primarily with pretrial pro-
cedure—subject-matter jurisdiction, jurisdiction over the person and venue, plead-
ing, motion practice, summary judgment and judgment on pleadings, motion for partial
judgments, preliminary discovery procedure, filled portion of pleadings with
provisions on alternative dispute resolution, the role of the judge in student
workshops, and overview of legal practice.

91:118 Constitutional Law I 3-6 s.h.
All areas of the law, assuming federal constitutions; judicial functions in con-
stitutional law: state-constitutional relationships among several branches of state
government; federal system/possibilities for local government; powers en-
acted in state; role of judicial process in enforcing laws within society
courts; institutional development of legal system and the relationship among various
institutions within society.

91:120 Contracts and Sales Transactions 2-4 s.h.
Introduction to law, subject of judicial procedure accorded second to contractual
agreements, as modified by legislation; creation of contracts, performance and
specific performance, and remedies available upon breach, as well as the Sales
Article in Uniform Commercial Code as Article relates to sales andleases; role of law in regulating commercial agreements; interference be-

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between judicial and legislative decisional processes.

91:136 Criminal Justice

Criminal justice includes such areas as what actions should be criminal and why, what
crimes to be instituted, the effectiveness of law enforcement; role of law in
defining such behavior; subjective law of necessity and theft; impression of
inheriting anti-social sciences and law to maintain a balance within legal system.

91:132 Property I 3-4 s.h.
Concept of ownership and to basic foundations of law; ownership of real and
personal property in interest in real estate and personal property; law of
real property and personal property;].

91:136 Resource Planning 3-4 s.h.

91:191 Energy in Contemporary Society

Energy and Management (E35

91:203 Administration of Trusts and Estates 3 s.h.

91:204 Administrative Law 3 s.h.

91:206 Advanced Criminal Procedure 3 s.h.

91:206 Administrative Law 3 s.h.

91:208 Antitrust Law 3 s.h.

91:209 Business Organizations 3 s.h.

91:210 Tax Law 3 s.h.

91:221 Business Organizations 3 s.h.

91:223 Criminal Law and Procedure 3 s.h.

91:225 Civil Procedure 3 s.h.

91:226 Professional Responsibility 3 s.h.
91:676 Selected International Law Problems

An intensive study of one or more current problems of international law and policy; conducted on both individual and group study bases, with emphasis on student-prepared research and writing.

91:680 Sex Discrimination

Discrimination in such areas as criminal law, employment, civil rights, welfare, family law; consular relations for each discrimination; emerging constitutional, statutory and case law developments in these areas.

91:684 United States Supreme Court

In-depth study; paper required. Prerequisite: 91:115 or 91:220; 91:275 recen-
nominal.
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 science courses administrated by the College of Medicine.

The M.D. Program

The Doctor of Medicine at Iowa differs in several significant ways from the traditional format of medical education. Its two-year introductory phase consists of three semesters of basic medical science and one semester of progressive orientation in clinical medicine. The third year consists of 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.

The Doctor of Medicine degree candidate's time of study must include attendance during at least four years of instruction. At least one year must be taken at The University of Iowa. A passing grade in each of the courses must be attained, and all other requirements of the College satisfied.

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 College, and making detailed arrangements with the graduate department chairman and the associate dean for Medical Student Affairs of the College of Medicine.

Graduate Programs

Programs leading to graduate degrees through the Doctor of Philosophy are offered in anatomy, biochemistry, microbiology, nutrition, pharmacology (including toxicology), physiology and biophysics, preventive medicine and environmental health science and radiation biology. In addition, graduate degree programs leading to the Master of Science degree are offered in ophthalmology, otorhinolaryngology and pathology.

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, American Men in Medicine or American Men of Science.

Facilities

The College of Medicine is housed in the U of I Health Center, which also includes the colleges of Dentistry, Nursing and Pharmacy. An $85-million expansion program began in 1969 which will make this one of the most advanced, comprehensive health science centers in the United States. Its present and projected facilities include:

General Hospital

The 810-bed General Hospital provides facilities for teaching all major medical specialties and for full programs of internship training and residency in all major specialties. More than 30,000 inpatients are admitted, and more than 110,000 outpatients are seen annually.

Children's Hospital

Children's Hospital houses orthopedic surgery, physical medicine and dermatology, a rehabilitation center, and the University's physical therapy training unit. It has a 167-bed capacity.

Psychopathic Hospital

With clinical and research laboratories in neurophysiology, biochemistry and psychology, Psychopathic Hospital has facilities for complete study of patients. It has 60 beds for adults and 25 beds for children. Four hundred inpatients are admitted annually and more than 9,500 outpatients are seen. The electronencephalographic laboratories serve the entire Health Center.

Hospital School

The Hospital School for Severely Handicapped Children provides educational opportunities for 60 physically handicapped and educable mentally retarded children on both a residential and a day-school basis. Its interdisciplinary program involves professional personnel from medicine, psychology and educational psychology, social work, nursing and therapy in activities
which combine patient care with research and professional training.

The Oakdale Campus
The 525-acre Oakdale campus is located seven miles northwest of the Health Center. Its 385-bed hospital houses the state tuberculosis treatment center, an alcoholism treatment unit, medical technology training laboratories and classrooms, and toxicology laboratories. Also on the 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 community adjacent to the campus and to provide a teaching base for the Department of Family Practice.

The Veterans Administration Hospital
The 440-bed Iowa City Veterans Administration Hospital is a integral part of the Health Center. Interns, residents and medical students may receive much of their clinical training here. Several of the major facilities of the Health Center are based in the VA Hospital, including laboratories for the transplantation program, highly specialized laboratories in nuclear medicine and special units for the study of metabolic and gastrointestinal diseases. The VA Hospital also offers unique training opportunities in the fields of clinical pharmacology, gastrointestinal, cardiology, nephrology and applied immunology.

The Health Sciences Library
Scheduled for 1974 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 includes a 24-hour study area and group study areas. Now numbering approximately 85,000 volumes, the College of Medicine collection covers all branches of medical science. In addition the College subscribes to more than 1,200 periodicals.

Other Facilities
The new Basic Sciences Building houses five departments of the College of Medicine. Other teaching facilities are located in the Medical Education Center and in the Medical School Building, which also houses the State Hygienic Laboratory.

Financial Aid
The College of Medicine currently awards approximately $125,000 in tuition scholarships to approximately 175 students each year. These scholarships are usually distributed equally among the four College classes. Most are awarded on the basis of need, although, in accord with the donor's wishes, some are awarded on other criteria. These scholarships vary in value from $500 to $1,300.

All 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 well as the need-based scholarships. Smaller and shorter-term loans are usually available through the office of the College of Medicine. The College is firmly committed to the Educational Opportunity Program, both academically and in terms of financial aid.

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.

The fee of $10 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.

Assessment of the specific requirements for admission does not ensure admission to the College of Medicine. From the applicants meeting the requirements, the admissions committee of the College of Medicine will select those who appear to be best qualified for the study and practice of medicine.

Each applicant must file with the Office of Admissions the completed application form and an official transcript from each college he or she has attended.

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 complete at least three years (94 semester hours) of college study, including the following specific courses or 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, history, which would ordinarily follow a complete introductory course in modern general chemical principles;
- Biological sciences: a complete introductory course in the principles of animal biology, or anatomy and biology (but not botany alone), and one advanced course in biology.

To be considered for admission, an applicant must have attained a grade-point average of at least 2.5 (A = 4) for all college work undertaken. Because the quality of work in premedical science is basic to success in medicine, special attention will be given by the admissions committee to grades in science. Where the college offers an option to take courses on a graded or pass-fail basis, it is expected that applicants will take the required science courses on a graded basis.

Preference will be given to applicants with high scholastic standing who are residents of Iowa, but consideration will also be given to outstanding nonresidents exclusively under the Early Decision Plan. Under this plan a single early application is submitted to one's first choice school by August 1 and the decision is made by October 1. Applicants are required to take the Medical College Admission Test administered by the Association of American Medical Colleges in May or October of the year preceding that for which they are seeking admission. Students may make arrangements to apply for this examination through the University's Evaluation and Examination Service.

Personal interviews will be arranged as desired by the admission committee.
Accepted applicants must make a $50 deposit within two weeks after notification of favorable action on the application. This deposit will not be refunded but is credited toward the first term fee payment.

Applicants accepted for admission are required to submit a satisfactory physical examination report to the University Student Health Service within two weeks after notification of acceptance. Applicants must also complete, through Student Health Service, an X-ray film of the chest and successful vaccination against smallpox prior to registration.

Admission to Advanced Standing
A transfer student may be eligible for advanced standing if he or she meets the admissions requirements; has satisfactorily completed courses qualifying him or her for advanced standing; has achieved high scholastic standing; and submits a statement from 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 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
The promotion committee 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 its decisions the committee will consider the attendance of the student as evidenced by the grade received in each subject (which should reflect the consensus of the instructional staff), his or her seriousness of purpose, his or her conduct and general fitness for entering the medical profession.

Nondepartmental Courses
50:105 Law and Medicine for Physician's Assistant Students 1 a.h.
Accounting the physician's assistant with fundamental principles of law bearing on professional activities; provides a basic vocabulary necessary to understand legal problems.
50:108 Biostatistics and Scientific Methods (Sophomore Level) 3 a.h.
Individualized, programmed review of basic biostatistics; emphasis on statistical concepts required to critically evaluate medical literature; topics include descriptive statistics, probability, population and sampling, interpretation of statistical significance tests, regression and correlation, presentations and discussions with clinical faculty cover basic principles and examples of epidemiology and clinical trials.
50:110 Neurology and Behavior 4 a.h.
Interdisciplinary study of elements, organization and functions of central nervous system. Same as Anatomy 60:052. Physiology and Biophysics 72:052.
50:111 Introduction to Clinical Medicine 16 a.h.
Full-time, full-year third-year student working in various general and specialty medical sections with emphasis on the clinical application of clinical science and clinical reasoning. Will prepare student for required clinical experience.
50:118 Endocrinology for Medical Students 2 a.h.
Same as Anatomy 60:118, Physiology and Biophysics 72:118.
50:121 Introduction to Clinical Medicine for Physician's Assistant Students 16 a.h.
50:161 Designing Learning Programs for Health Careers Education 3 a.h.
Strategies based on development and evaluation of educational programs; suggestions for planning procedures and typical curricula analyzed and practical applications gained through establishment of working relationship with ongoing educational program; activities individualized to meet various backgrounds, needs and objectives. Same as Education 70:161.
50:163 Learning Strategies for Health Careers Education 3 a.h.
Role of health specialist or teacher examined; variety of learning strategies explored through discussion, observation, micro-experiences and experiences with 360-degree learning environment; activities individualized to meet various backgrounds and needs. Same as Education 70:163.
50:269 Facilitating Learning in Health Careers Education 3 a.h.
Role of health careers educator in teacher and learning facilitator explored in detail; student experiences with variety of learning strategies through meetings, discussions, observation, micro-experiences and subject-specific activities. Prerequisite: 50:161 or equivalent. Same as Education 70:269.
50:273 Health Careers Education and the Health Service Industry 3 a.h.
Comprehensive overview of health service industry, particularly as related to both initial preparation and continuing education of health care professionals.

Anatomy
Department Head: T. H. Willerme
Degree offered: M.S., Ph.D.
The Department performs three major functions: teaching anatomy of the human body to students preparing for careers in the health care professions; providing advanced courses, teaching experience and research training to graduate students preparing for careers in teaching and research; and conducting original research into biological structure and function-relation-

Instructing Students of the Health Care Professions
The Department contributes to the preclinical education of health care professionals by providing courses in gross anatomy, microscopic anatomy and neurobiology for medical students; gross anatomy and microscopic anatomy for dental students; gross anatomy and neuroanatomy for physical therapy students; anatomy for physician's assistant students; microscopic anatomy for dental hygiene students; and gross anatomy for nursing and dental hygiene students. In most of these courses, the students learn about the structure of the human body mainly by working in teaching laboratories—dissecting, examining specimens with a microscope and studying specially developed learning materials.

Numerous innovative approaches to the study of anatomy, such as the use of programmed texts, videodiscs and projection slides programs, have been developed by the faculty. The status of teaching in this Department introduces structural concepts and data in the context of functional biology.

Graduate Study
The main goal of the graduate program is to prepare students for careers in teaching and research. Job opportunities, primarily in medical schools, are excellent for anatomy Ph.D.'s. Consequently, the graduate program emphasizes the training of
Anatomy

Ph.D. The M.S. degree is offered only to students in health science programs who take time off from their preclinical studies to acquire experience in teaching and research. The M.S. is awarded on the basis of satisfactory completion of coursework in each of the major subdisciplines of anatomy—gross anatomy, microscopic anatomy and neurology; teaching assistance in two of these areas; a thesis based upon an experimental study; and an oral defense of the thesis.

Admission to the graduate program follows the general Graduate College requirements. (See "Graduate College." ) An applicant's undergraduate background should include mathematics through calculus, one year of organic chemistry, at least two biology courses, and one year of general physics. Applicants are considered for admission on a competitive basis, taking into account each applicant's academic record, performance on the Graduate Record Examination Aptitude Test, letters of recommendation, and expressed career goals. Financial support is available to most students selected for the Ph.D. program.

All students in the Ph.D. program acquire in-depth knowledge of each of the three subdisciplines of anatomy by taking courses and teaching in each of them. Since most students who complete the Ph.D. program will find positions in which teaching constitutes a significant part of the responsibility, the Department gives this special consideration in teaching workshops. During the first year in the program a student chooses a research area and becomes affiliated with a faculty member whose research is in that area. Early in the third year the student takes a comprehensive examination assessing his or her ability to analyze, organize, and apply the information, concepts and skills acquired in the first two years of the program.

The final examination for a Ph.D. candidate is a critical evaluation of his or her research capability. It consists of a written thesis and an oral thesis defense, the thesis based on original experimental study done with the guidance of the faculty adviser and four other faculty members. The research areas of the Department include cell biology with oncology, endocrinology, neurobiology and reproduction. In addition, active research is carried out in teratology and histology.

Facilities

The most modern instrumentation is available, including four high-resolution electron microscopes, cryostats, an automated gamma counting system, etc. Research is increasingly problem-oriented, and is becoming discipline-independent, and is principally in the theme areas mentioned in the previous section.

Faculty Roster

Professors Halmi, Kaibhor, Karlson, Williams; associate professors Aranaz, Erlandsson, Heigler, Moffat, Parsons, Scranton; assistant professors Appolone, Barrett, Bhalla, Della, Jew, Lin, Osks, Searle, Tomskel.

Courses


6021. Human Microscopy and Anatomy 4 h. Cells, primary tissues, organs, emphasis on teeth and related structures; includes embryology. For dental hygiene students only.

6019. Human Gross Anatomy for Dental Students 4 h. Regional dissection of entire body with major emphasis on head and neck; includes miscellaneous. Open to graduate students with consent of instructor.

6013. Gross Human Anatomy for Medical Students 5 h. Regional dissection, demonstrations, lectures and conferences. For graduate students. Prerequisite: consent of instructor.

6015. Microscopic Anatomy for Medical Students 4 h. Cells, fundamental tissue and microscopic study of organ systems. Prerequisite: Consent of instructor.

6017. Neuroanatomy and Behavioral 4 h. \n
6018. Special Microscopic Anatomy 4 h. Microscopic structure of organs. Prerequisite: biology including biology of emanence or consent of department head.

6019. Human Anatomy 4 h. Conference and laboratory study of human anatomy; emphasis on areas important to physical therapists. Regulation limited.

6019. Human Anatomy and Neuroanatomy 2 or 4 h. Continuation of 6019, which is prerequisite.

6011. Gross Human Anatomy for Physicians' Assistants 3 h. Regional dissection, programmed instruction, lectures and demonstrations with special emphasis on the use of gross human anatomy in physical diagnosis. Prerequisite: enrollment in the Physician's Assistant Program or consent of instructor.

6012. General Microscopic Anatomy for Dental Students 4 h. Cells, primary tissues and organs. Graduate students must have consent of instructor.

6014. Oral Microscopic Anatomy and Embryology 3 h. Rats concurrently with 6012; emphasis on teeth and related structures.

6016. Living Anatomy and Interview Techniques for Physician's Assistants 2 h. Teaching assistant; programmed instruction; physical diagnosis of normal anatomy on cadavers; introduction to interview techniques.

6016. Endocrinology for Medical Students 3 h. Core course in endocrinology. Prerequisite: graduate student; consent of instructor. Same as Non-Department Medical 5611 and Physiology 72.118.

6021. Advanced Human Anatomy 3 h. Specialized aspects of gross or microscopic anatomy. Prerequisite: consent of department head.

6018. Anatomy Research 3 h. Open to graduate students with suitable background. Prerequisite: consent of Department head.

6016. Topical in Basic Endocrinology 3 h. \n
6016. Microscopic Anatomy Theory and Techniques 3 h. Prerequisite: consent of instructor. Same as Microbiology 40.130 and Biology 32.98.

6016. Teaching in Workshop in Anatomy 3 h. Practical application of educational psychology to teaching anatomy; formulation of course objectives, teaching methodology, use construction and evaluation.

6016. Problem in Anatomy 3 h. Prerequisite: consent of department head.

6016. The Nervous System 3 h. Anatomical systems: components, structural relationships and functions, including central mechanisms. Primarily for enrolled students. Offered upon sufficient demand.

6016. Review of Anatomical Neurology 2 h. \n
6016. Important issues in clinical nervous system; emphasis on functional relationships. Offered only upon sufficient demand. Same as Surgery 71.19.

6016. Introduction to Research 3 h. Lectures, discussion and laboratory experience in research techniques, experimental design and acquiring research support.

6016. Electron Microscopy Theory and Techniques 4 h. Prerequisite: consent of instructor. Same as Microbiology, 41.130 and Biology, 32.98.

6016. Advanced Electron Microscopy Techniques 3 h. Lectures, demonstration and laboratory experience on special techniques of electron microscopy.
Anesthesia

Department Head: Jack Moyers

The Department introduces the second-year medical student to anesthesia as a specialty; helps to develop in the third-year student some concepts and technical skills related to resuscitation, airway management and the care of the comatose patient; and offers the fourth-year student more 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 anesthesiology.

Faculty Roster

Professors: Bouttrou, Moyers, Sokol; associate professors: Baltrons, Dellerbruck, Gargis, Ghoshnem, Kennedy; assistant professors: Callenger, Hovik, Hoyt, Rodman; instructor: Dahl.

Courses

118:10 Clinical Anesthesia Elective
118:10 Intensive Care

Evaluation and treatment of critically ill patients in the intensive care unit; hemodynamic monitoring; anesthesia of patients requiring cardiopulmonary bypass; pharmacology of anesthetics. Four hours. Prerequisites: four hours 118:20.

118:20 Special Studies Off Campus

Research in well-defined project relating to anesthesia; hours of study variable. Prerequisites: two years of pharmacology, four hours of advanced physiology, and four hours of advanced biochemistry. Independent study under the direction of the Department head. Nine hours.

Graduate Programs

The graduate program in biochemistry places dual emphasis on the disciplines and master's programs. The Department offers the master's program independently, but master's degree work is also presented by some Ph.D. candidates. The Department also offers opportunities for qualified and interested students to pursue M.S.-M.D. or Ph.D.-M.D. combined programs.

The focus of the graduate program is on the individual student, whose specific needs are met both in the conference-tutorial approach of the formal coursework and in the broad range of research areas from which he or she may choose a thesis topic.

The only formal core first-year students usually take is an intensive one-year offering in general biochemistry (99:256 Biochemistry) in the first semester, 99:252 Seminar in the second), assessment an interdisciplinary approach. The first-year student spends most of his or her time in association with one or two faculty laboratories (99:251 Research Techniques), learning research techniques in the context of ongoing projects.

The second-year student chooses a research laboratory for his or her Ph.D. thesis research, and takes whatever courses he or she and the advisory committee agree upon for his or her program. The student may also take other courses, in or outside of the Department, to satisfy his or her own interests, apart from the program.

After passing the comprehensive examinations, toward the end of the second year, the student is formally admitted to degree candidacy and concentrates on thesis work. The program culminates in the completion of this work, and its successful defense before the thesis committee.

In addition to meeting these and the general requirements of the Graduate College, the student is expected to assist in the teaching of biochemistry for two or three semesters, as part of his or her training.

Throughout the program, the student is associated with small seminar groups and receives close personal attention from the biochemistry faculty member who serves as his or her research advisor.

Research Interests

The Department's current research interests include several areas of a phosphate-dependent, cyclic AMP-dependent, and chemical and biochemical reactivity of the carbohydrates, hormonal control mechanisms, structure and function of nucleic acids, gene control in higher organisms, biochemistry of glycogen and carbohydrates-protein complexes, mechanisms of protein synthesis, kinetics, isolation and characterization of protein, enzymes, and drug metabolism, conformation and chemical and biochemical changes during development.

Facilities

The University Health Center's current $80-million expansion program provided new quarters for biochemistry in the Basic Sciences Building in the spring of 1972. Biochemistry shares
Financial Assistance
Financial assistance is available to all students admitted to the doctoral program in biochemistry.

Admission
The graduate program in biochemistry is sufficiently flexible to accommodate students with a relatively wide range of backgrounds. Students with bachelor's degrees in any of the biological, physical, or chemical sciences are encouraged to apply. The Graduate College admission requirements (see the Graduate College section of the Catalogue) minimum requirements of the Department 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.

Faculty Roster

Courses

Biochemistry 3-4 h.
One-quarter lecture course for nonmajors focusing on molecular dynamics of biological systems and mechanisms used to maintain them. No prerequisites.

Biochemistry 5-6 h.
Seminar in Molecular Genetics 1-2 h.
Preparation of seminar topics, discussion, and presentation. Prerequisite: approval of instructor. No prerequisites.

Biochemistry 6 h.
Seminar in Molecular Genetics 2-4 h.
Preparation of seminar topics, discussion, and presentation. Prerequisite: approval of instructor. No prerequisites.

Biochemistry 6 h.
Seminar in Molecular Genetics 3-4 h.
Preparation of seminar topics, discussion, and presentation. Prerequisite: approval of instructor. No prerequisites.

Biochemistry 6 h.
Advanced seminar in molecular genetics 3-4 h.
Preparation of seminar topics, discussion, and presentation. Prerequisite: approval of instructor. No prerequisites.

Biochemistry 6 h.
Seminar in Molecular Genetics 4-6 h.
Preparation of seminar topics, discussion, and presentation. Prerequisite: approval of instructor. No prerequisites.

Biochemistry 6 h.
Seminar in Molecular Genetics 5-6 h.
Preparation of seminar topics, discussion, and presentation. Prerequisite: approval of instructor. No prerequisites.

Biochemistry 6 h.
Seminar in Molecular Genetics 6-7 h.
Preparation of seminar topics, discussion, and presentation. Prerequisite: approval of instructor. No prerequisites.
Enocrinology

Endocrinology

Enocrinology

Endocrinology

Endocrinology

Endocrinology
Courses

For course descriptions, see the appropriate experimental section.

Anatomy

65:119 Endocrinology for Medical Students 2 s.h.
Same as Physiology and Biophysics 70:119.

65:120 Introductory Endocrinology 2 s.h.
Same as Physiology and Biophysics 70:203.

Biochemistry

90:202 Molecular Endocrinology 1-3 s.h.

Zoology

37:164 Comparative Physiology 2 s.h.
37:165 Introductory Endocrinology 2 s.h.
37:166 Endocrinology Laboratory 2 s.h.
37:166a Introductory Endocrinology 2 s.h.
37:250 Seminar: Endocrinology 2 s.h.
37:251 Seminar: Hormones and Behavior 2 s.h.

Family Practice

Department Head: Robert E. Rakel

The family practice program was initiated in answer to the need for more primary-care physicians in Iowa and throughout the nation. Appropriate coursework in the Department is included throughout the four-year M.D. program. The Department's 14 elective unique rotations give students opportunities for exposure to various Iowa communities through work in affiliated hospitals or connected facilities, in the Department's Outpatient and William-
nburg offices and in preceptorships with selected family physicians throughout the state. There is also ample opportunity for independent study during the senior year, and an internation- al health care elective offers exposure to primary health care systems of other countries.

Residency

The Department directs a three-year residency program, gradu- ants of which are eligible for certification by the American Board of Family Practice. A fourth, or fellowship, year is also available. This residency trains physicians to provide continuing and comprehensive care to the total family unit, utilizing a con- cept wherein the patient, allied health professionals and the physician are integrated into an efficient and effective health care team.

The program is intentionally flexible to allow each resident freedom to tailor his or her training to individual interests and needs; it includes a broad spectrum of electives in internal medicine, pediatrics, obstetrics and gynecology, psychiatry, medical and surgical subspecialties and community medicine. The program currently offers 72 individual rotations.

The hospital-based clinical experience is a unique combina- tion of exposure to practice in the University Hospitals, where the patients have been referred by physicians from all over the state, and in various community hospitals, where the inpatient care is of a nature more typical of family practice.

During the first year, a large portion of the program is based at Mercy Hospital in Iowa City, where residents have the oppor- tunity for total participation in the practice—both inpatient and outpatient—of the private physician staff. Rotations are specifi- cally designed to provide breadth of experience, however, and a number are available at Broadlawns Polk County, Iowa Luth- eran and Sioux Memorial hospitals in Des Moines, St. Joseph Mercy Hospital in Mason City, the Mason City Community Health Center and the Security Medical Facility in Iowa City.

Special Facilities

Based at University Hospitals, the Department maintains a fam- ily Practice Office on the University's Oakdale Campus, four miles northwest of Iowa City, and a satellite office at nearby Williamsburg. The Williamsburg office is the only health care center in that community. In both offices, patient families are assigned to a resident/student group, with faculty supervision, and are seen by appointment. Responsibility for their care re- sides with that group for the period they are in the program. Within both units, emphasis is also placed on teaching the prin- ciples of practice management, including organizational and ad- ministrative decision-making, patient record and bookkeeping procedures, and chart auditing methodologies, as required to manage a private practice.

Faculty Roster

Professors Cadoret, Rakel; associate professor Douglas; asso- ciate professors Bosley, Coblis, M. Kochman, P. Kochman, Messner, Parker, Uht, Widmer; clinical assistant professor Champion, Martin; clinical instructor Abrams; associate Colby, Watkins.

Courses

114:251 Introduction to Family and Community Medicine 2 s.h.
114:401 Family Practice, Broadlawns arr.
Assignment in the Model Family Practice Clinic is the focal point of the clerkship experience; student also sees patients in major clinical services, under supervision of one or more family practice teachers.
115:402 Residential Emergency Room, Outpatient Clinic, Broadlawns arr.
Thirty-five three-hour sessions annually; student works under direct supervision of a family practice resident, in the parallel supervision by a staff physician. When hospit- al admissions is required, student follows patient in inpatient service; student also maintains continual contact with patient under the emergency room and/or clinic setting.
115:403 International Health Care arr.
Emphasis on exposure to primary health care delivery systems of other countries; rotations available at selected sites in Great Britain, Germany and China, with additional sites available for volunteers. Full course credit granted for approved courses.
115:404 Practicum in Family Practice arr.
Available with assigned family practice preceptor in a variety of rural or urban practice in Iowa, including both unit and group practices.
115:405 Family Practice Clerkship, Cedar Rapids arr.
Four-week rotation in the Family Practice Model Office; opportunity to provide health care to a group of patients whom the student follows for the duration of the clerkship; under the director's supervision, the clerk will also assist patients in the Family Practice Inpatient Service at Mercy Hospital, designing the diagnostic program and assuming responsibility for the therapeutic design.
Internal Medicine

Department Head: James A. Cifton

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 toxicology, endocrinology, gastroenterology, hematology, infectious diseases, renal and hypertensive disease and rheumatology.

Members of the Department bear a major share of the teaching of second-year M.D. students in Introduction to Clinical Medicine, where students begin to learn the pathophysiology, signs, symptoms, complications, prevention and treatment of disease. Students are taught to obtain histories, perform physical examinations and 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 courses offered in general medicine and the specialties.

Graduate Program

The Department offers straight internships and an approved residency program of high quality. In addition, most specialty divisions 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 internship are accepted from approved medical schools. Past doctoral fellows who have obtained their Ph.D.s are also accepted for programs in which the major focus is laboratory research.

Facilities

Teaching occurs on the medical services and in the laboratories of the University hospitals in Iowa City and the Veterans Administration hospitals in Iowa City and Des Moines.

Faculty Roster


Courses

7509 Cardiovascular Research and Special Study an. Independent research and study in basic research; initiated on problems of suprarenal and corpuscular systems, instruction in research methods in endocrinology; students assigned to investigators in work in progress. For graduate students. Prerequisite: approval of preceptor.

75108 Internal Medicine an. Elective for Physical Medicine students.

75109 Clinical Medicine for Junior Medical Students 9 s.h.

75109 Advanced Cardiovascular Research and Special Study an. Special studies for research project requiring some knowledge of hemodynamics, fluid mechanics in extracorporeal systems, student assigned to investigator with work in progress. For graduate students. Prerequisite: approval of preceptor.

75201 General Medicine, Diagnostic Clinic an. Assignment for four days a week in general diagnostic clinic; clinical evaluation of medical problems; emphasis on diagnosis and management of common medical problems presented in initial clinic, as well as such aspects as management of office practice, problem of illness and compensation in untrained health care.

75203 Medicine-Consultation Service an. Emphasis on development of ability to assess and recommend medical therapy for hospitalized and ambulatory patients while serving in service capacity.

75203 Clinical Allergy-Immunology an. Emphasis in diagnosis and treatment of patients in allergy and immunology clinic; students assigned to solo practice or allergy residents will be responsible for inpatient care of patients in allergy clinic; experience after patients in medical problems.

75203 Research in Allergy-Immunology an. Students directed to one or more areas chosen from those with which instructors are identified.

75203 Clinical Cardiology an. Development of breadth and depth in diagnostic and therapeutic problems encountered in clinical cardiology; participation in evaluation and delineation of patient care seen in Cardiac Arrhythmia Clinic, internal consultations, and Cardiological Clinic; faculty with techniques and resources of managing acute and chronic problems, and various diagnostic and therapeutic techniques used in management of these acute and chronic cases seen in postoperative patients during cardiological follow-up visits.

75203 Diagnostic Cardiac Catheterization Laboratories an. Emphasis on cardiological study and interpretation of abnormal cardiac terograms and hemodynamic data, and for instruction in the patients of analysis and interpretation; stress being in association with one or more fellows working in this area.

75303 Lipid Metabolism—Atherosclerosis Clinic Research Center an. Development of knowledge related to functions of lipid metabolism and atherosclerosis; emphasis on understanding of atherosclerotic disease and the role of such phenomena as lipiduria in atherosclerosis; participation is Lipid Clinic, consultation service and clinical pathology laboratories.

75307 Clinical Research Center 4 s.h.

73079 Cardiovascular Research and Special Study an. Independent research and study in basic research; initiated on problems of suprarenal and corpuscular systems, instruction in research methods in endocrinology; students assigned to investigators in work in progress. For graduate students. Prerequisite: approval of preceptor.

73109 Clinical Cardiology—Des Moines VA Hospital an. Work on Medical Service, work on patient care in cardiology, emphasis in cardiology clinics for clinical care. Students will also work on patients seen in consultation clinics of Card Komment, Care Unit, Drum, hospital provided at hospital; fees for services are provided.
ology, microbial genetics, immunology, microbial physiology, medical mycology and virology. Several of these specialized fields involve interdisciplinary training within and outside the department, so students receive broad experience during their course of study.

Usually the Department accepts only students desiring a Ph.D. degree. These students may obtain an M.S. degree during their graduate work, or proceed directly toward the Ph.D. Students may petition for a terminal M.S. degree at the time of application.

All students admitted as candidates for advanced degrees are expected to assist in teaching in the Department during their course of study.

Incoming students are evaluated by the Department before the beginning of their first semester in residence to determine their areas of strength and weakness. The student chooses a research supervisor who serves as chairman of the student's advisory committee. This committee assists the student in planning a program of study, and reviews from time to time the progress in research.

The Department cooperates with other departments in the various colleges on the campus, affording ample opportunity for students to avail themselves of the University's diverse course offerings, seminars and research programs. For example, courses in clinical laboratory microbiology, genetics and electron microscopy are taught in an interdepartmental basis.

M.S. Program

The beginning course requirements for the M.S. student are the same as those for the Ph.D. program. A thesis based on the student's own research is required.

Ph.D. Program

Candidates for the Ph.D. must satisfy the departmental course requirements as determined by the student's advisory committee (minimum requirements: one course in each of four of the six subdivisions available in the Department, or 15 semester hours of coursework in two different areas); pass a comprehensive examination and write a thesis and defend it satisfactorily in an oral examination.

Facilities

The Department is housed in the new Basic Sciences Building together with the departments of Anatomy, Biochemistry, Pharmacology and Physiology and Biophysics. Adequate space and excellent equipment are available for teaching and research.

Graduate Admissions

Prospective graduate students should become familiar with the general admission requirements of the Graduate College. Departmental requirements include a review and formal vote by the faculty before the student is admitted. Before beginning graduate work, the student must have completed courses in biology, chemistry (inorganic, organic, quantitative analysis), mathematics (up to calculus) and physics. Exceptions may be allowed, but students admitted with an above average must take during the first year of graduate school. The student should have a grade-point average of 2.7 or better to be admitted to the graduate program in microbiology.

Faculty Roster

Professor: Casali, Hoffmann, Marquart, Porter, Stit; associate professors: Becker, Richardson, Stubb; assistant professors: Butler, Crouch, Fears, Feldmark (taxing), Galask (obstetrics and gynecology), Johnson, Lathem, (anatomy), Stites, Walker.

Courses

01:16 Medical Microbiology

Principles and methods essential to study of microorganisms, their isolation and identification, antimicrobial agents involved in infection control; recent advances in bacteriology and virology and new concepts of immunity. Prerequisites: registration in College of Medicine.

01:64 Microbiology Elective

A four-year medical student wishing to take additional coursework or research in medical bacteriology, medical mycology, virology or other areas of discipline.

01:12 Microbiology for Physician's Assistant Students

Introduction to medical microbiology with emphasis on the common community encountered pathogenic microorganisms and procedures useful in a physician's office. Prerequisite: registration as physician's assistant.

01:47 Survey of Immunology

Interdisciplinary survey of fundamentals of cellular and molecular immunology and application to clinical problems: appreciation of field as whole; involvement locally from the department of Microbiology, Immunology, and Microbiology and Immunology, Department of Biochemistry and Medicine. Prerequisite: 01:167.

01:57 General Microbiology

Fundamental principles of physical physiology and genetics; immunology and pathogenic microbiology. Corequisite Chemistry 41:121. Open to liberal arts and graduate students.

01:58 Microbiology

Intermediate course designed primarily for majors in microbiology. Open to students with adequate background from other academic disciplines on consent of Department. Prerequisite: 01:167 and one course in biology.

01:65 Pathogenic Bacteriology

Discussion of pathogenic bacteria, with emphasis on mechanisms of pathogenicity and immunity. Methods used for isolation and identification of bacteria. Laboratory techniques for study of pathogenic bacteria. Prerequisite: 01:317 and consent of instructor.

01:60 Microbial Physiology

Chemistry and physiology of microorganisms, enzymes, metallothecial and microbial metabolism. Prerequisite: 01:617.

01:695 Problems in Microbiology

Arranged.

01:66 Diurnal Microbiology

Arranged.

01:696 Clinical Microbiology

Arranged.

01:696a Laboratory Microbiology

Arranged.

01:696b Laboratory Microbiology

Arranged.

01:696c Laboratory Microbiology

Arranged.

01:696d Laboratory Microbiology

Arranged.

01:696e Laboratory Microbiology

Arranged.

01:696f Laboratory Microbiology

Arranged.

01:696g Laboratory Microbiology

Arranged.

01:696h Laboratory Microbiology

Arranged.

01:696i Laboratory Microbiology

Arranged.

01:696j Laboratory Microbiology

Arranged.
Neurology

61:168 Animal Virology
4 s.h.
Basic mechanisms of viral infections and the role of viruses in disease. Prerequisite: 61:157 and consent of instructor.

61:169 Medical Mycology
4 s.h.
Basic techniques used in study of fungal pathogens for man. Prerequisite: consent of instructor. Same as Science 2157.

61:170 Virological Genetics
3-4 s.h.
Genetics of viruses and bacteriophage; laboratory optional. Prerequisite: 61:157. Zoology 37:119 or consent of instructor.

61:171 Honors in Microbiology
arr.
Prerequisite: major ranking, 3.0 grade-point.

61:172 Honors in Microbiology
arr.
Prerequisite: 61:171.

61:173 Laboratory Methods in Cellular Immunology
4 s.h.
Intermediated course in immunology designed to acquaint advanced students. Prerequisite: biology major or consent of instructor. Prerequisite: advanced laboratory work in cell biochemistry or microbiology and normal laboratory work in cellular immunology and methods used for investigating these disciplines. Students placed on role of lymphocytes in both humoral and cell-mediated immunity. Prerequisites: 61:100, 61:147, 61:157 or consent of instructor.

61:287 Molecular Immunology
3 s.h.

61:281 Genetics Seminar
0-2 s.h.
Same as Zoology 37:215 and History 2394.

61:217 Cellular Immunology
3 s.h.
Structural, development and function of immunocytes; antibody formation; hyper- sensitivity; immunopathology, topics vary yearly, or a three-year cycle may be used repeatedly. Prerequisite: 61:173 or consent of instructor.

61:218 Electron Microscopy—Theory and Technique
Same as Anatomy 62:218 and Surgery 2318.

61:230 Microbial Ecology
arr.
Prerequisite: consent of instructor.

61:281 Research Microbiology
arr.
Open to candidates for advanced degree in bacteriology.

61:368 Topics in Animal Virology
1 s.h.
Current problems in normal virology. May be repeated; topics vary. Prerequisite: 61:157 and consent of instructor.

61:372 Topics in Molecular Biology
arr.
Lectures and seminars on selected topics of special interest. Prerequisite: consent of instructor.

Neurology

Department Head: Maurice W. Van Allen

Neurology is a segment of medical science concentrating on en- jaristic disorders of the brain, spinal cord and peripheral nervous system, their diagnosis and management. Medical student teach- ing and the problems of patients with neurological disorders carefully integrated with patient care, has long been a significant function of the Department. The Department is the Central Registry for the International Cooperative Anesthesia Project, funded by the National Institute of Neurological and Communicative Disorders and Stroke, and collaborates with the Department of Ophthalmology in sponsoring the Neurosurgery Center, which is supported by the National Institute of Neurolo- gical Diseases and Stroke. The Neurosurgery Center is con- cerned 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 in third and fourth-year medical students, contributing to the Doctor of Medicine degree. In addition, an active three-year residency program in all facets of the neurologic 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 train- ing contributing to the degree of Doctor of Philosophy in Psychology.

The activities of the Department include clinical training in neurology, electromyography and, in conjunction with other de- partments, pediatric neurology, psychology, electroencephalograph- y and neuropharmacology. A well-equipped neuropathology laboratory is available for research and clinical studies in epilep- sy, and, in cooperation with the Department of Physiology and Biophysics, the Department operates an active muscle physiolo- gy laboratory.

Faculty Roster

Professors Salts, Van Allen; associate professor Findham, Ki- mura; assistant professors Nishihara, Lyon, Rodinsky; associ- ated Buxtor, Munsat.

Joint Appointments

Professors Benton (Psychology-Neurology), Knott (Electroencephalography-Neurology); associate professor Bell (Pediatrics- Neurology); assistant professors Lukovic (Neurology-Physiolo- gy), Sybil (chief of Neurology Service, Iowa City-V.A. hospital); associate research scientist Schottelles (Neurology- Physiologv).

Courses

64:6 Lectures to Nurses
arr.
Lecture and demonstration in various phases of neurologic diseases of im- portance to nurses.

64:111 Clinical Neurology for Junior Medical Students
3 s.h.
Fundamental programs in neurology and the nervous system.

64:192 Advanced Basic Neurology
1 s.h.
Special lecture and demonstration in basic neurology; particularly neuronephroscope- hy and neuropharmacology. For resident staff and elective number of senior students.

64:112 Principles of Neurology
2 s.h.
Lectures, demonstrations and participating in the management of neurologic diseases usually limited to residents. Summary of nervous system outside and methods of diagnosis in neurologic diseases.

64:230 The Apathetic Disorders
2 s.h.
Analysis of aprosopagnosia, classification and clinicopathological correlation. Same as Psychology 31:277.

64:306 Clinical Neuropsychiatry
3 s.h.
Classification of brain-behavior relationships in man; analysis of behavioral distur- bances associated with central disorders; cancer application of psychological test methods of inferring central state. Same as Psychology 31:363.

Multiple Adjunctive Clinical Neurology
arr.
Intensive 7-day course in diagnosis and management of patients with neurologic disease. Course comprises upper nervous system anatomy; clinical neuroanatomy and pathophysiology; clinical and laboratory aspects of neurologic disease. Course open to residents in neurology and allied fields, but not for neurology. Neuronephrology Institute of Medicine and hospital of University of Iowa. Designed for neurology resident. Neurology and home care residents. Same as Pediatrics 21:228.

64:201 Research Projects in Clinical Neurology
arr.
Structured training in clinical neurology with emphasis on problems of clinical neu- ronctroneurosis, cardiovascular disease, drug abuse, degenerative diseases and other neurologic diseases. Research of appropriate quality specified for publication. Library research as well as pertinent observations on study protocols included. One main course period three months. Offered all year.
Neurosciences

Committee Chairman: Lucas E. Van Orden III

The nervous system encompasses all functions of all animal nervous systems, from the molecular and cellular levels to complex integrated function and behavior, and include biochemical, biophysical, morphological, pharmacological and behavioral techniques. The function of the Neurosciences Program is to provide a vehicle for the interdisciplinary and intercollegiate teaching and research training activities which characterize the neurosciences. Undergraduate, graduate and postdoctoral students have abundant opportunities to take interdisciplinary courses and to participate in the numerous interdepartmental research projects, seminars and 'normal' workshops which have grown out of the expansion of the program with the aid of the National Science Foundation Biological Sciences Development Program. Graduate students affiliated with one of the participating departments may identify neuroscience as a subdiscipline of their own field. Program participants must have quite diverse backgrounds in such fields as mathematics, physics, biology, chemistry, pharmacy, medicine and psychology.

Faculty Roster

Professor Kofler, Williams (Anatomy); Gel (Biochemistry); Brady, Long, Van Orden (Pharmacology); Diack, Linsan, Schoenfield, Shipton (Physiology and Biophysics); Brinton, Fox, Henry (Psychology); Small (Speech Pathology and Audiology); Dingel, Kline, Spittel (Zoology); professor emeritus Ingram; associate professors Karses (Anatomy); Baker, Hillman, Ni- cholson, Phillips, Thomson (Physiology and Biophysics); Bowles, Randell (Psychology); Segman, Kater (Zoology); as- sistant professors Azarm, Eliahs (Anatomy); Roskowski (Bio- chemistry); Birok, Gehlert, Heunnen (Psychopharmacology); Dawson, Lukovic (Physiology and Biophysics); Johnson, Kreat- son (Psychology); Wunck (Speech Pathology and Audiology); Barrett, Murphy (Zoology); instructor Grisham, Weerts (Psychology).

Courses

For descriptions of the courses listed below, see the appropriate departmental listings.

Interdisciplinary

50:110 Neurology and Behavior

SFIN: Anatomy 50:107, Physiology and Biophysics 72:118

6 a.h.
Obstetrics and Gynecology

Department Head: W. C. Keettel

Course: Obstetrics and Gynecology for Juniors 8 a.h.

The courses in obstetrics and gynecology are designed to give M.D. students a comprehensive survey of female reproductive problems. This is done through a series of didactic lectures, inpatient and outpatient assignments, ward rounds, teaching seminars and special elective courses.

The third-year clerkship (86-4 Clinical Obstetrics and Gynecology for Juniors) gives the student a core of information he or she will need to be prepared to care for women no matter what his or her career choice.

In the fourth year a variety of electives is available, intended to train the student in the skills of obstetrics and gynecology in a private hospital setting or in a multispecialty clinic. These electives include rotations at Broadlawns Polk County Hospital, Des Moines; Lafayette Charity Hospitals, Lafayette, Louisiana; Medical Associates, Dubuque; St. Luke's Hospital, Davenport; Methodist Hospital, Des Moines; and The Gundersen Clinic, La Crescent, Wisconsin.

Residency Program

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 resident rotates through the various divisions of the Department and gains for both hospital inpatients and outpatients. Additional training is obtained in perinatal clinics in Waterloo, Cedar Rapids and Davenport. During the final year, the resident spends time at Methodist and Broadlawns hospitals in Des Moines. In the third-year rotation, the resident is trained in normal and abnormal obstetrics, advanced gynecologic surgery, office gynecology, endocrinology, oncology, family planning and endoscopic procedures. Advanced specialty training after the completion of the residency is available in endocrinology and oncology.

Faculty Roster

Professors: Bradbury, Goplerud, Keettel, Plikin, White; associate professors: Buchbaum, Chapler, Galski, Hedges, Kreitze-

Mar, Van Orden, assistant professor de Pioce.

Courses

86-4 Advanced Obstetric Clerkship: Des Moines

- Essential care as 86-3; room and board provided; attendance is student's responsibility. Two students; four weeks; offered all year.

86-4 Advanced Gynecologic Clerkship: Des Moines

- Work on gynecology ward, perform prenatal and laboratory duties. Two students; two weeks; offered all year.

86-10 Gynecologic Oncology

- Clerkship designed to provide opportunity for each student to become proficient in special language and physical examination of the female patient and diagnostic techniques and therapy; special attention to diagnostic techniques, including use of biopsies; close attention to endocrine and metabolic problems; teaching of patients and families. One student; four weeks; offered each year.

86-12 Gynecologic Endocrinology (Clinical)

- Student functions as member of endocrinology team; responsibility for initial evalu-

ation will vary with seniority of student. One student; offered each year.

86-14 Gynecologic Radiology (Research)

- Work in departmental research laboratory, review, on specific problem or topic of interest to student in area of obstetrics and/or gynecology; will consult as necessary for identification of problems and development of methods and approaches; student need not have interest in research. One student; offered each year.

86-16 Advanced Obstetric-Gynecologic Clerkship: La Crescent

- Work in obstetrics and gynecology at Gundersen Clinic; closed staff multispecialty group with two obstetricians and gynecologists responsible for 700 deliveries per year and comprehensive maternal and infant care; simple opportunity for experiences in operating and delivery rooms, ward rounds, prenatal care and ob-

stetric clinics such as obesity, high-risk obstetrics, etc.; daily teaching conference.

Two students; four weeks; offered all year.

86-17 Advanced Obstetric-Gynecologic Clerkship: Des Moines

- Experience in obstetrics and gynecology as above. One student; four weeks; offered all year.

86-18 Advanced Obstetric-Gynecologic Clerkship: Davenport

- Experience in obstetrics and gynecology as above. One student; four weeks; offered all year.

86-20 Advanced Obstetric-Gynecologic Clerkship: Dubuque

- Experience in obstetrics and gynecology as above. One student; four weeks; offered all year.

86-21 Advanced Obstetric-Gynecologic Clerkship: Grant

- Experience in obstetrics and gynecology as above. One student; four weeks; offered all year.

86-22 Advanced Obstetric-Gynecologic Clerkship: Indianola

- Experience in obstetrics and gynecology as above. One student; four weeks; offered all year.

86-23 Advanced Obstetric-Gynecologic Clerkship: Waterloo

- Experience in obstetrics and gynecology as above. One student; four weeks; offered all year.

86-24 Advanced Obstetric-Gynecologic Clerkship: Waterloo

- Experience in obstetrics and gynecology as above. One student; four weeks; offered all year.
Orthopaedic Surgery

Department Head: Rayfield R. Cooper
Degrees offered: M.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 orthopaedics, adult orthopaedics, neurology, rehabilitation, prosthetics and orthotics, rheumatology and basic sciences related to orthopaedics.

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 amputees 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 orthopaedic laboratories or a basic science department.

Departmental Laboratories

The orthopaedic laboratories deal with problems in these major subject areas:

Biochemistry—The biochemistry of mucopolysaccharides and collagen, both normal and those altered in epiphyseal dysplasias and scoliosis.

Biomechanics—in conjunction with the College of Engineering, biomechanical problems of the upper extremity and biomechanics of the hip and the gait, and total joint replacements.

Cell biology and pathology—ultrastructural studies on normal bone, cartilage, tendons and muscles, and on those altered by experiment and disease.

Tissue transplant, radioactive isotypes and metabolic bone disease—calcium, bone marrow transplantation and various aspects of mineral composition and bone density in metabolic bone diseases.

Facilities

The Department is housed in Children's Hospital, and has an active service in the nearby Iowa City Veterans Administration Hospital.

Facilities include 120 beds, an outpatient clinic, a specialty library, a specialty radiology unit, a brace shop and physical therapy facilities.

Physicians in the outpatient clinic see approximately 90 patients a day.

Specialty clinics deal with such problems as scoliosis, club feet, congenital dislocated hips, neuromuscular disease, metabolic diseases, amputees, hips, knees, hands, neoplasms 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 mentally retarded.

Faculty Roster

Professors: Rondigo, Cooper, Platt, Lassen, Presetti; professors emeriti Paul, Stronge, associate professor Pedrini; assistant professors Albright, Sprague, Strotmann.

Courses

76:12 Clinical Orthopaedics for Junior Medical Students
76:101 Fundamentals of Orthopaedics
76:102 for allied health science students only.
76:103 Orthopaedics for Physician's Assistant Students
76:201 Advanced Clinical Orthopaedics
76:202 Open to senior medical students only.
76:203 Open to senior medical students only.
76:203 Surgical Care of the Hand
76:205 Elective
76:206 Clinical Orthopaedic Elective
76:207 Laboratory Experience
76:208 Laboratory for senior medical students only.
76:209 Special Studies on Campus
76:209 Special Studies on Campus
76:209 Open to senior medical students only.
76:211 Special Studies on Campus
76:211 Open to senior medical students only.

Otolaryngology and Maxillofacial Surgery

Department Head: Brian F. McCabe
Degrees offered: M.D.

The Department provides one of the oldest and largest otolaryn-
gology and maxillofacial surgery training programs in the world. Currently there is a full-time faculty of 20, including several masters from the anatomy, audiology, dentistry and speech pathology professions.

The Department's major objective is to provide a high-level instructional program in otolaryngology and maxillofacial surgery for medical students and residents. To maintain a broad and in-depth teaching program, a large patient load is borne by the Department's faculty and staff in these clinical areas: head and neck oncology, maxillofacial trauma; craniofacial defects, such as cleft palate; disorders of the vestibular mechanism; facial plastic surgery; pediatric and otologic hearing problems; voice problems; peripheral endoscopy; surgical of deafness; and all the areas usually considered otolaryngic.

In addition to the major otolaryngology and maxillofacial medical-surgical service, there are four other divisions in the Department which fulfill this program comprehensive: facial plastic surgery, craniofacial defects, speech and hearing, and research.

Otologyngology and Maxillofacial Surgery
Another major objective of the Department is to foster re-
search 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 res-
idents 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 re-
search programs within the Department in vasculature physio-
logy, cleft palate, collagenase in temporal bone disease, anat-
omy 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 sup-
port.

Graduate Course in Otolaryngology

The program in otolaryngology is in accordance with the re-
quirements of the American Board of Otolaryngology. The pro-
gram consists of a four-year course of basic and clinical science.
The basic-science group consists of a series of didactic lec-
tures and laboratory studies preparatory to actual clinical work.
It is conducted during the first three and one-half months of res-
idence, usually July 1 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 super-
vised clinical and operative work, clinical conferences and semi-
inars pertinent to the practice of otolaryngology and its related
fields.

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.

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.

Faculty Roster

Professors Baglach, Kienast, McCabe, Morris, Otis, Spies-
terbach, professors emeriti Arsen, Lacote, Negus; associate pro-
fessors Anderson, Krause, LaVeille, Smith, Van Denmark;
assistant professors Abramson, Harker, Mendel, Voos; research
scientists Kuehn, Rhyne, Tharp.

Courses

88-100 Basic Otolaryngologic Science

Special reference to head and neck, upper gastrointestinal tract, respiratory tract
and ear, including lectures on descriptive anatomy and physiology, surgical anatomy
of head and neck, embryology, microbiology, pathology, pharmacology, exo-
mammary, head and neck surgery, radiology, speech pathology and audiology,
psychology, scientific method (research and experimental methodology), design of
experiments, evaluation of laboratory data, histology of ear and temporal bone.

88-201 Research Techniques in Otolaryngology

Laboratory course designed to familiarize student with research philosophy, equip-
ment and procedures; required two months on full-time basis, with work in depart-
mental research laboratories concerned with audiology, psychophysics, vascular
physiology; anatomy and physiology of larynx, microsurgical anatomy and pathol-
ogy of the temporal bone, and instrumentation of biologic measurements; litera-
ture assignments supplemented with assigned readings and projects.

86-210 Clinical Conference in Otolaryngology, Rhinology and
Head-and-Neck Surgery

Presentation of diagnostic methods and outlines of management for assigned pa-
ients. May be repeated.

86-211 Clinical Otolaryngology, Rhinology and
Head-and-Neck Surgery

Diagnosis and treatment of patients in areas of rhinology, laryngology, ent and
head-and-neck surgery; systematic review and reinforcement of ENT examination
techniques including otoscopy. May be repeated.

86-221 Advanced Clinical Audiology

Special clinical seminar in hearing, such as Foetky Audiology, PGER, Delayed
PapKern, DPOAE, Fixate, use of business recruitment and other develop-
ments in audiology.

86-232 Seminar: Medical Audiology

Critical review of audiometric procedures used in combination with medical pro-
cedures. May be repeated.

86-233 Seminar: Otolaryngology and Related Fields

Critical and economic review of current licensees in otolaryngology and related
fields. May be repeated.

86-250 Research: Otolaryngology

Research concluded in conjunction with thesis requirements for M.S. degree, in-
volving preparation of paper which must be approved by faculty advisor and
departmental research committee. May be repeated.

86-402 Dental Treatment of Maxillofacial Deformities

Clinical assignments for patients with maxillofacial deformities. Limited to grad-
uate students in dentistry.

86-401 Seminar in Maxillofacial Rehabilitation

Topics currently discussed versus types of facial deformity. Limited to medical
and dental graduate students.

86-402 Maxillofacial Prosthetics

Clinical prosthodontic treatment for patients requiring max- and extraoral prostheses,
including facial and body prostheses.

Pathology

Department Head: George D. Parkan

Degree offered: M.S.

The Department offers a wide range of formal courses and train-
ing programs variously designed for medical, dental and gradu-
ate students, as well as residency training leading to certification
in anatomic and clinical pathology by the American Board of
Pathology.

Medical and Dental Programs

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 highly-structured educational
objectives, utilize a variety of learning experiences: lectures, self-instructional tape-slides, programmed
texts, laboratories, clinicopathological conferences and small group
discussions of selected case material.

The courses in general pathology introduce the student to the
general responses of the body and to various types of injury,
including inflammation, sepsis, immune responses, etc. During
the courses in systemic pathology, the student learns to apply
these general principles to a study of the specific disease entities
as the responses occur in various body systems. Integrates
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 systems and clinical pathology are offered as electives to senior medical students. In addition a limited number of seminars and clinics are available to predoctoral students.

Graduate Programs
Coursework leading to the Master of Science degree in pathology is available only to students of medicine, dentistry and medical technology. The program for medical or dental students requires a year's leave of absence from school and emphasizes research and instructional technology and introduces to histologic and clinical pathology. The program for students with a medical technology background emphasizes specialization in a selected area of medical technology, and may include instructional technology.

The A.M.S. 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 forms' coursework in pathology and other basic sciences. Interested students should contact the Department for an interview prior to application.

Predoctoral Programs
The Department is approved for two junior internships in pathology and 18 residencies, covering a training span of six to five years. The programs are designed to utilize the patient population 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 specialties as neuropathology, dermatopathology and gastrointestinal pathology, and special pathology of the blood and each region.

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 tissue, heart and blood vessels, as well as members of medical microbiology, medical chemistry, hematology and blood banking.

A special position for a morning program designed for RH.D. biochemists is also offered in medical chemistry.

Medical Technology Program
In cooperation with the University of Iowa Hospitals and Clinics and the Veterans Administration Hospital, the Department of Pathology sponsors a Medical Technology Program. This program is approved by the Council on Medical Education and Hospitals of the American Medical Association and by the National Accrediting Agency for Clinical Laboratory Sciences. After completion of 94 semester hours including requirements as described in the Pre-Medical Technology curriculum in the College of Liberal Arts, a student may apply for the clinical fourth year in the College of Medicine. Upon satisfactory completion of the clinical program, the student is granted 30 semester hours of credit.

After successful completion of the four-year program, the student is awarded a Bachelor of Science or 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 them to such designation as Medical Technologist (American Society of Clinical Pathologists).

Pre-Medical Technology Curriculum
In the preclinical program, the medical technology student must satisfy the College of Liberal Arts core requirements and must earn at least 36 semester hours of credit in science. The credits in science must include 16 semester hours in chemistry, including general chemistry, quantitative analysis and organic chemistry; and 16 semester hours in the biological sciences, including zoology, microbiology and parasitology. A course in mathematics is required, and a course in bacteriology highly recommended.

To enter a clinical hospital program, the student must have earned a total of at least 94 semester hours of credit in preclinical studies, with a 2.0 minimum cumulative grade-point average; for acceptance into the University of Iowa clinical program, a 2.5 minimum average is highly recommended.

Application to the clinical program at Iowa must be made through the Department of Pathology. Completion of the pre-medical technology program at Iowa does not guarantee admission to the University of Iowa clinical program Admission to this program is on a competitive basis.

Clinical Programs
The University of Iowa clinical program in medical technology consists of 17 months of didactic and practical instruction, and is divided into approximately six months of academic professional coursework and six months of clinical laboratory rotation.

The program provides in-depth coverage of clinical hematology, clinical microbiology, urinalysis, blood banking, clinical microbiology, virology and parasitology. During the final six months, rotations through the clinical laboratories of University Hospitals and the Iowa City Veterans Administration Hospital afford additional experience and opportunities to implement the theory and techniques acquired in the teaching laboratories during the first six months of the program.

Because the clinical program at The University of Iowa is limited to a total of 32 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 toward a bachelor's degree is to be granted upon completion of the clinical program.

Facilities
The pre-doctoral programs are supported by a recently-remodeled student laboratory, as well as conference rooms for small group discussions.

The Department has a newly-remodeled histopathology laboratory equipped for officer processing of tissue specimens; a special stain laboratory; a special neopathology histotechniques laboratory; an autopsy room with two dissecting tables; a cytology laboratory; an immunopathology laboratory; and a library.
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 comprehensive problems of disease and critical illness. These are daily rounds and ward work involving general pediatrics and all subspecialties. The more challenging and interesting cases are presented to the staff for diagnostic treatment and discussion.

Outpatient experience stresses principles and principles required for the maintenance of health in children—immunizations, physical care, nutrition, mental hygiene and utilization of public health facilities.

Faculty Roaster
Professor Anderson, Baker, Bell, Filer, Fonmon, Hardy (Speech Pathology), Luer, MacQueen, Read, Rembold, Rowley (Psychology), Smith, Solomons, Zallweg; clinical professor Hill; associate professor Henry, Jonasen, Johnson, Kiker, Kriz, Roberts (Pharmacology), Steiglitz (Biochemistry), Stehlin (Psychology), Taylor, Thompson, Youngs; assistant professors Carter, Chandranandu, Elmale, Ehrenberg, Harpe (Psychology), Hayen (Psychology), Hein, Karoni (Psychology), Meyers, Richard (Psychology), Robins, Robidou, Schlotter, Ziegler; clinical assistant professor Wintemeyer; instructor Crishaw.

Courses
7025 Neonatal Pediatrics 8 a.h. Principles of prenatal care, including diagnostic techniques and management of the newborn, including care in the nursery and intensive care unit. Neonatal problems of the newborn, exclusive breast-feeding and normal newborn, patient education, referral, and discharge. Four-week term.
7027 Pediatric Gastroenterology and Nutrition 8 a.h. Principles and practice of nutrition in diagnosis and management of gastrointestinal disease in infants and children. Four-week term.
7816 Pediatric Hematology 8 a.h. Principles and practice of nutrition in the community. Nutrition, growth, and development in the community. Nutrition in the community, including dietetics and community nutrition. Four-week term.
7817 Pediatric Cardiology 8 a.h. Principles and practice of nutrition in the community. Nutrition, growth, and development in the community. Nutrition in the community, including dietetics and community nutrition. Four-week term.
Graduate Study

Prerequisites for graduate study include undergraduate background in chemistry, biology and mathematics, and a high level of performance is expected of all applicants.

M.B. Program

In cooperation with clinical departments within the College of Medicine, a Master of Science degree program in clinical pharmacology is available to applicants who already hold the Doctor of Medicine degree. The specific objective of these programs is to provide increased emphasis on, and training in, the science of clinical pharmacology for residents in the various clinical specialties.

Completion of the program requires a minimum of two full years. The following core curriculum is mandatory unless specifically waived by the Pharmacology faculty: 71:208 Biostatistics and Biostatistics, 71:100 Pharmacodynamics, 71:200 Cardiovascular Pharmacology, 71:212 Toxicology, 71:204 pharmacology Seminar and 71:303 Pharmacology Research. Additional courses may be taken as appropriate to the progress of the intern.

At the completion of the first year, the candidate will be eligible for a Master of Science degree in pharmacology provided he or she has demonstrated sufficient proficiency in basic research, has passed the qualification examination (written and oral) and has satisfied the thesis requirements (preparation and defense).

Ph.D. Program


Upon successful completion of the qualifying examinations, the student selects a specific area of research and a faculty research advisor. The student must complete at least one course appropriate to his or her interest, beyond those listed above, and more than one may be required by individual faculty research advisors. There is no departmental foreign language requirement. Two years beyond the qualification examinations are usually required for thesis research. The Doctor of Philosophy degree is awarded upon satisfactory preparation and defense of the thesis in an oral examination.

Faculty Roster

Professors Brody, Long, Spratt, Teghly, Van Orden, Williamson, Williams, and generations are current or past department members. Preference is given to chemistry, biology and mathematics, and a high level of performance is expected of all applicants.

Courses

71:160 Pharmacodynamics

7.1.0.0 Pharmacodynamic and experimental approaches to drug action, emphasis on concepts and tools of experimental pharmacology. Open to students in science and mathematics.

71:208 Pharmacology

7.2.0.0 Pharmacologic methods and techniques; emphasis on the use of xenobiotics for research in pharmacology.

71:212 Toxicology

7.2.12 Methods and techniques for the identification and characterization of toxicants.

71:303 Pharmacology Research

7.3.03 Research skills and techniques for the elucidation of the mechanisms of drug action. Open to students in science and mathematics.

71:303 Pharmacology Seminar

7.3.03 Seminar in pharmacology. Open to students in science and mathematics.

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in the actions of drugs, behavioral and physiological correlates of specific drug effects, clinical aspects of current research, approach of current literature. Periodic review of instruction.

71-565 Internal Medicine 1 s.h. Mechanisms of drugs affecting renal transport systems. Permeability, transporters, carrier mechanisms, and transport of drugs.

71-570 Clinical Toxicology 1 s.h. Toxicological implications of drugs and chemicals for the practicing physician; topics include intoxication and treatment of accidental and intentional ingestion (poisons). Selected agents (drugs in detail) includes alcoholism, barbiturates, salicylates and drug of abuse. Prerequisite: 71-125 or equivalent.

71-580 Clinical Pharmacology and Therapeutics Lecture Series 2 s.h. Series of topics by clinicians and pharmacologists covering therapeutic, special categories or clinical pharmacological approaches in treatment of diseases in man. For third and fourth-year medical students, pharmacy students, other preprofessional students. Serve as a base of knowledge for future professional study.

**Physical Therapy**

See "College of Liberal Arts."

**Physician’s Assistant Program**

Program Advisor: Ray Montgomery

Degree Offered: B.S.

The physician’s assistant is a person qualified to collect historical and physical data about a medical patient, and to organize and present this data in such a way that the supervising physician can visualize the medical problem and determine appropriate diagnostic or therapeutic procedures. The physician’s assistant is also capable of performing these procedures, and of coordinating the activities of other, more technical, assistants. While he functions under the general supervision and responsibility of the physician, under special circumstances, and under defined rules, the physician’s assistant may perform without a physician’s supervision, and thus must be able to exercise independent judgment based on general medical knowledge. The demands for physician’s assistants is increasing in all types of health care settings, particularly as their role becomes more clearly defined.

**The Iowa Program**

The program at Iowa is approved by the American Medical Association’s Joint Review Committee on Educational Programs for the Associate to the Primary Care Physician, the Iowa Board of Medical Examiners and the Association of Physician’s Assistant Programs. Completion of the program qualifies students for the Bachelor of Science degree and the National Board of Medical Examiners’ Certifying Examination for Physician’s Assistant. Successful completion of the National Certifying Examination is a prerequisite to licensure in Iowa.

The program at The University of Iowa emphasizes the practice of general medicine in a setting designed to foster the use of health care teams. In addition to opportunities with private practice physicians, a network of primary care clinics is being developed in the state to serve communities with an integrated health care system. These family clinics will integrate the physician’s assistant into the medical delivery team with physicians, health technicians, public health workers, clinical nursing staff and social service personnel.

The physician’s assistant program is an integral part of the College of Medicine. The first year of the program is taken in the University of Iowa Health Center. A major part of the second-year clinical work occurs throughout the state in settings where primary care is practiced.

The program is 24 months in length and is broadly divided into three phases. The initial, didactic, phase consists of seven months of course and laboratory work in a number of basic sciences areas. Whenever appropriate, related subjects are integrated to provide sequential lecture, laboratory and clinical experience.

The second phase, Introduction to Clinical Medicine for Physician’s Assistant Students, is an informational bridge to clinical medicine, and develops the skills of history-taking, physical diagnosis and interviewing techniques. A detailed course specifically directed to the behavioral sciences and analysis of health care systems is also offered during this session.

The third, clinical phase consists of supervised rotations in required and elective specialties. These rotations of four or eight weeks’ duration allow the students to apply the knowledge gained in the didactic and pre-clinical phase of the program and to develop additional skills through individual, supervised instruction. The rotations are designed to provide opportunities for each student to become proficient in the history-taking and physical examination that they are peculiar to patients with various conditions. Inpatient clinical training is provided by the University of Iowa Medical Center and affiliated hospitals, as well as the postgraduate training clinics at Outside and Mucocinetic. Students gain additional clinical experience through placement with selected preceptors involved in clinical work in private practice or in community hospitals.

The didactic and clinical phases of the program emphasize primary health care delivery and the use of physician’s assistants on this type of service team. The program is integrated into the teaching of the College of Medicine, thus permitting a transition to develop between various medical and health care professional students.

**Professional Curriculum**

**First Year**

71-125 Pharmacology for Physician’s Assistant Students 4 s.h.

50-105 Law and Medicine for Physician’s Assistant Students 1 s.h.

60-111 General & Nutritional Anatomy for Physician’s Assistant Students 4 s.h.

60-116 Living Anatomy and interview Techniques for Physician’s Assistant Students 2 s.h.

61-130 Microbiology for Physician’s Assistant Students 2 s.h.

69-203 Principles of Human Pathology 4 s.h.

69-130 Clinical Pathology for Physician’s Assistant Students 2 s.h.

72-164 Human Physiology for Physician’s Assistant Students 4 s.h.

99-164 Biochemistry for Physician’s Assistant Students 3 s.h.

50-121 Introduction to Clinical Medicine for Physician’s Assistant Students 16 s.h.

117-101 Seminar: Physician’s Assistant Students 1 s.h.
Second Year
Required clinical rotations:
70:535 Pediatrics for Physician's Assistant Students 5 s.h.
73:555 General Surgery for Physician's Assistant Students 8 s.h.
78:555 Internal Medicine for Physician's Assistant Students 8 s.h.
115:555 Family Practice for Physician's Assistant Students 8 s.h.
Elective clinical rotations: four to be selected from the following, to include, if available, the first two:
66:100 Obstetrics and Gynecology for Physician's Assistant Students 4 s.h.
73:100 Psychiatry for Physician's Assistant Students 4 s.h.
70:101 Child Health Care for Physician's Assistant Students 4 s.h.
70:102 Pediatric Elective for Physician's Assistant Students 4 s.h.
75:100 Emergency Room for Physician's Assistant Students 4 s.h.
76:162 Orthopedics for the Physician's Assistant Students 4 s.h.
115:500 Family Practice Elective for Physician's Assistant Students 4 s.h.
78:100 Internal Medicine Elective for Physician's Assistant Students 4 s.h.

Faculty
All courses in the physician’s assistant professional program are taught by College of Medicine departmental faculty members. The program is administered with advisory assistance from a committee appointed by the dean of the College and including medical faculty members, practicing physicians in private practice, health care administrative personnel and students currently enrolled in the program.

Expenses
In addition to tuition, room, board, books, supplies and other general University student expenses, students in the physician’s assistant program are responsible for the purchase of their uniforms and diagnostic equipment. Microscopes are not required.

Financial Aid
In addition to the various forms of financial aid available to undergraduate students, a limited number of special tuition scholarships are available to students in the physician’s assistant program, on the basis of need.

Admission Requirements
To be eligible for admission to the physician’s assistant program, the applicant must have completed at least 60 semester hours of college study, including:
College of Liberal Arts general education requirements in rhetoric, physical education, and the historical-cultural, literature and social science cores;

A complete introductory course in organic chemistry, which would ordinarily follow a complete introductory non-laboratory course in modern general chemistry principles; and

A complete introductory and one advanced course in zoology or animal biology.

It is also strongly recommended, although not required, that the applicant’s high school background include algebra, trigonometry and physics.

Applicants who have already completed a baccalaureate program at an accredited college or university automatically meet the Liberal Arts general education requirements.
The applicant must have achieved at least a 2.5 grade-point average (A = 4) on the last 60 semester hours of college coursework undertaken. The admissions committee gives special attention to the applicant's performance in science coursework.

Satisfaction of the basic admission requirements does not ensure acceptance into the physician's assistant program. The admissions committee selects the applicant it considers best qualified. Applicants with previous health care experience involving direct patient contact receive preferential considerations.
The committee may request interviews with selected applicants.

Admission Procedures
A new class begins each June. Applications are accepted beginning one year in advance, and close February 1. Early application is recommended. In addition to completing the general University admission application procedures, the physician's assistant applicant should present a detailed description of the applicant's medical training and experience.

Course
111:101 Seminar: Physician’s Assistant Students 1 s.h.

Letters, medals and group award-deciing with topics of specific interest are presented to the physician's assistant students at the graduation ceremony. Open only to students enrolled in the physician's assistant program.

Physiology and Biophysics
Acting Department Head: F. P. F. Jochle
Degree given: M.D. (M.D. program). The Department participates in the professional education of medical, dental, pharmacy, physical therapy, nursing and physician's assistant students. It also offers advanced study in physiology and biophysics, usually leading to the doctorate in preparation for university-level teaching and research.

Graduate Study
The Department does not normally prescribe the undergraduate background for advanced study; its students commonly include baccalaureate graduates in biology, chemistry, physics, mathematics and engineering.

With the help of his or her advisory committee, the student develops a plan of study tailored to his or her particular background, needs and interest. The only fixed requirements are an appropriate advanced course in biochemistry; 71:212 Medical Physiology; and two other advanced courses in physiology.

The usual chronology for the doctorate is two years of coursework, a comprehensive examination, and 2 or 2 years of research.
research for the dissertation, completion of the dissertation and a final examination in defense of the dissertation.

No candidate is recommended for the doctorate until he or she has prepared and submitted an article derived from the dissertation for publication in an appropriate scientific journal.

Fellowship support is available for doctoral students. The Department also offers the Master of Science degree, with thesis, and a physiology emphasis for students pursuing the Master of Science degree in science education.

Admission
In addition to the University's general graduate admission requirements (see the Graduate College section of the Catalog), minimum requirements for admission to the graduate program in physiology include a 3.0 undergraduate grade-point average, two semesters of undergraduate coursework in life science subjects, a combined total of six semester hours in chemistry and physics, and mathematics through differential equations. An applicant deficient in the prerequisite coursework may be admitted if he or she can make up the deficiency during his or her first year in the graduate program.

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 located at the Oakdale Campus about six miles west of the main health science campus.

Faculty
Department faculty members are active in many different areas of research. Current interests include cardiovascular physiology, exercise physiology, environmental physiology, gastrointestinal physiology, neurophysiology, respiratory physiology; biochemistry of growth, biochemistry of excitation and contraction, endocrinology, biomedical engineering, membrane transport and neurobiology.

Faculty Roster

Courses
72110 Introduction to Human Physiology 4 s.h.
Basic concepts of human physiology. Fall semester. Prerequisites: Zoology 331, Chemistry 439 or equivalent and consent of instructor.
72114 Introduction to Human Physiology 4 s.h.
Basic concepts of human physiology. Spring semester. Prerequisites: Zoology 331, Chemistry 439 or equivalent and consent of instructor.
72121 Introduction to Biophysics 4 s.h.
Physical properties of biological substances; each topic as biochemistry, information, mechanics, and fluid flow and diffusion in living organisms. Offered first in, offered second semester in alternate years. Prerequisite: one year each of biology, physics, calculus and consent of instructor.
72122 Neurophysiology 4 s.h.
Basic concepts of neurons are delayed adaptation in agonist muscle activity. Offered second semester in alternate years. Offered 1974-75. Prerequisites: 72101, graduate standing and consent of instructor.
72110 Neurobiology and Behavior 4 s.h.
General survey of the behavior and functions of nervous systems. Same as Non-Department Medical 301, Anatomy 661 and Psychology 861. Offerings made with consent of the instructor in physiology, psychology, consent of the instructor, consent of the instructor.
72116 Endocrinology for Medical Students 3 s.h.
Course for graduate students in biochemistry. Same as Non-Department Medical 531, and Anatomy 661. Offered second semester.
72141 Analytical Study of Physiology 2 s.h.
Designed for majors of physical and engineering sciences to provide a basic grounding in the techniques of their field in biological and engineering science. Lectures, laboratory, and classes. Offered first semester. Prerequisite: two full years of physical or engineering coursework and introduction to differential equations.
72142 Analytical Study of Physiology 2 s.h.
Continuation of 72141. Offered second semester in alternate years. Prerequisite: 72141; however, alternative courses may be required.
72143 Physiology II 2 s.h.
Prerequisites: 110, 120, 130, and 140. Offered second semester in alternate years. Prerequisite: 72142; however, alternative courses may be required.
72150 Intermediate Physiology 6 s.h.
Required of pharmacy students. The laboratory course with consent of instructor in pharmacology and physiology students with consent of instructor in organic chemistry and physiology. Offered first semester. Prerequisite: Zoology 331.
72151 Intermediate Physiology 6 s.h.
Required of pharmacy and physical therapy students; available with consent of instructor to graduate and senior undergraduate faring in pharmacology and an organic chemistry course in organic chemistry. Offered first semester.
72152 Histology and Embryology 4 s.h.
Principles of histology and gross examination of human tissues and cell types. Prerequisites: consent of instructor; open to seniors and junior undergraduates. Offered second semester in alternate years. Prerequisite: Zoology 331.
72154 Human Physiology for Physicists and Biologists 1 s.h.
Required, with open only to students in the graduate program. Tightly integrated with anatomy and physiology.
72159 Research in Physiology and Biophysics 4 s.h.
For graduate students who are not masters or doctoral candidates of Department of Physiology and Biophysics. Prerequisites: consent of head of the Department. Offered 1976-77.
72200 Advanced Biophysics 3 s.h.
Introduction and clinical ethics of exercise on excitation, electrolytes, diamines, amino acids, and advanced laboratory and clinical science courses offered in 72217 and 72212. Offered second semester in alternate years; offered 1974-75. Prerequisites: Zoology 72101, and Biochemistry 71204.
72300 Topics in Basic Endocrinology 3 s.h.
Dynamics of endocrine systems, open to graduate and medical students. Prerequisites: Anatomy 661, 72102, Biochemistry main course or equivalent, consent of instructor. Same as Anatomy 661. Offered first semester.
72311 General Physiology 6 s.h.
Required of students who are interested in conducting research in clinical medical and physical sciences. Offered second semester. Prerequisites: anatomy, physiology, biochemistry, and consent of instructor.
72312 Medical Physiology 6 s.h.
Required of five-year medical students and open to graduate physicians with advanced preparation in biological and medical sciences. Offered second semester. Prerequisites: anatomy, physiology, biochemistry, and consent of instructor.
72321 Advanced Systems Physiology 3 s.h.
Computer simulation of human and laboratory study of function of biologic systems; each semester, particular emphasis on development of clinical medical and physical sciences. Students with consent of instructor. Offered 1975-76. Prerequisites: Biochemistry 71201 and 9901 or consent of instructor. Offered first semester in alternate years; offered 1975-76. Prerequisites: adequate background in basic and physical sciences and consent of instructor.
72322 Advanced Systems Physiology 3 s.h.
Prerequisites: Biochemistry 71201. Offered second semester.
72323 Scientific Techniques of Physical Physiology 2 s.h.
Students who have completed one year in applied physics course in the last five years, may be offered in alternate years. Prerequisites: Biochemistry 71201 and 9901 or consent of instructor. Offered first semester in alternate years; offered 1974-75. Prerequisites: Biochemistry 71201 and 9901 or consent of instructor. Offered first semester in alternate years; offered 1974-75.
The Department of Psychiatry maintains a three-year training program that is approved by the Residency Review Committee of the American Medical Association. Training experiences are available at the Iowa Psychopathic Hospital and at the Iowa City Veterans Administration Hospital. Additional experiences are available at affiliated institutions, including the University of Iowa Hospitals, Broadlawns Hospital in Des Moines, the Iowa Security Medical Facility in Iowa City, the Mid-Eastern Iowa Community Mental Health Center in Iowa City and the Mental Health Institute at Independence, Iowa.

The staff of the Department of Psychiatry is actively involved in genetic and family studies of psychiatric disorders, and includes a number of experts in the fields of genetic and biological psychiatry.

A variety of opportunities is available for students and residents to participate in research. The basic science areas of neurochemistry, neurophysiology and electroencephalography offer additional opportunities to students and residents for special study and research. The clinical areas of psychology, child psychiatry, social work, recreational therapy and vocational therapy likewise offer opportunities to a limited number of students for research and further study.

Faculty Roster


Courses

72-456 Clinical Psychiatry for Junior Medical Students 8 a.h.
Sections of 20 students meet once weekly, staff meetings and examine patients in Psychopathic Hospital, through six-week period; history taking, mental examination and interviewing.

72-106 Psychiatry for Physician Assistant Students prn.

72-106 Research: Psychiatry prn.
Medical students, graduate students and physicians who have had training in psychiatric methodology attend for special investigations in biological or psychologic problems related to psychiatry.

72-106 Research: Psychiatry prn.
Continuation of 72-106, but may be taken as independent work.

72-257 Research: Biology of Behavior 2 a.h.
Biological basis of behavior: genetic, constitutional, physiologic, biochemical, pathologic and pharmacologic factors in relation to normal and abnormal behavior and studies of these factors on therapy.

72-257 Research: Biostatistics 1 a.h.

72-257 Research: Biostatistics 1 a.h.

72-257 Electrophysiology 2 a.h.

72-257 Electroencephalography 2 a.h.

72-257 Electroencephalography 2 a.h.

72-257 Electroencephalography 2 a.h.

72-257 Research: Psychiatry prn.

72-257 Problems in Psychiatry prn.

72-257 Law and Psychiatry 1 a.h.

72-257 Law and Psychiatry 1 a.h.

72-257 Open to seniors in law and medicine: mental disease considered from medical-legal view by means of clinical and case study.

Radiation Biology

Program director: John C. Frame Degree offered: M.S., Ph.D.

Radiation biology is the study of properties and biological effects of radiation and nuclear 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 such as biology, physics and chemistry. The Radiation Research Laboratory, which houses the program, is a part of the Department of Radiology. Some graduates of this program are teachers of radiation biology in biology or science departments of colleges and universities; some are in departments of radiology (radiation biologists, radiological physicists), environmental protection (health physicists) and nuclear medicine (researchers); some are in cancer research centers.

Undergraduate Courses

Two courses, 77-105 Introductory Radiation Biology and 77-106 Environmental and Radiobiological Health Physics, are open to students of liberal arts or professional college. They 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 emphasizes the technical aspects and serves as a minor field for those whose major interest is in another, but related, field.

The Ph.D. program in radiation biology is open to graduate students with a background in one of the fields of physics, chemistry, mathematics, biology, health sciences, veterinary medicine or engineering. Ordinarily, the M.S. in this or a related field is required for admission to the Ph.D. program, but consideration will be given to other methods of qualifying.

After a completion of the introductory course, the student may emphasize a particular aspect of the field. The details of the program are built around persons training, interests, abilities and career objectives. Some students elect to emphasis training in physical aspects, such as radiological physics or health physics. Others major in biological aspects. In either case, a broad background in radiation biology is the goal. In addition to formal lectures, the programs involve small group conferences and discussions. Laboratory exercises are emphasized and the student has the opportunity to become familiar with many types of instruments and techniques. It is recommended that a candidate for the Ph.D. have a reading knowledge of scientific French or German and competence in biologic statistics or computer programming before taking the final examination. Students will have at least one semester of experience as a teaching assistant and at least one as a research assistant. A limited number of paid assistantships and fellowships are available.

Admission

In addition to satisfying the entrance requirements of the Graduate College, the applicant should have had courses in mathematics, physics, chemistry and biology. Deficiencies in one of these fields may be remedied early in the study of the program. A com-
Special Facilities
The Radiation Research 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 Ce-60 gamma source in the Department of Radiology and the reactor of the Biology Division at Argonne National Laboratory. The Radiation Research Laboratory has a small test 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 case, and facilities for preparing histological sections of tissues.-fixed or frozen—and autoradiographs.

Special Facility Strengths
The faculty has had many years of teaching and research experience in radiation biology. All faculty members are members of the Radiation Research Society, and a number of them are members of related 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.

Staff members have served on executive boards and advisory committees of the American Cancer Society, the National Council on 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 been, or are, authors and co-authors of numerous papers and chapters of books dealing with radiobiological effects, uses of radiations, and care and therapy.

Faculty Roster

Professors DeGowin, Evans, Jackson, Osborn, Riey; associate professor Cheng, assistant professors Cooper, Soliday, Hubard, Eberhard.

Courses

1177/165 Introductory Radiation Biology 4 s.h.
Characteristics and regulation of ionizing radiations, properties and uses of radiations, medical applications, biological effects of ionizing radiations; laboratory exercises in use of radiation detectors, measuring devices, and experimental techniques; characteristics of radiation effects. Prerequisites: consent of instructor.

1177/166 Environmental and Radiobiological Health Physics 3 s.h.
Lec-124, laboratory exercise;s; radiations, 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 environment. Prerequisites: four s.h. of physics or chemistry.

1177/167 Seminar: Radiation Research 1 s.h.

1177/168 Seminar: Radiation Research 1 s.h.

1177/169 Seminar: Radiobiology 1 s.h.

1177/170 Seminar: Radiobiology 1 s.h.

1177/171 Physics of Radiobiology I 4 s.h.
Le-124, laboratory exercises, characteristics of X-ray machine, medical and therapeutic devices, properties of X-rays and gamma rays and their interaction with matter; measurement of radiation exposure and depth dose, using chemical and radiometric dosimetry devices, ionization chambers, G.M. and gas ionization chambers, and Nal crystals, histological target theory and survival curves. Prerequisites: eight s.h. of physics and consent of instructor.

1177/172 Physics of Radiobiology II 4 s.h.
Lec-124, laboratory exercises, production and properties of radiations; treatment of cell injury factors in radiobiological decay, gene flux determinations, and activation analysis. Electrons photomultiplier measurement spectroscopy applied to radiobiological studies. Prerequisites: eight s.h. of physics and consent of instructor.

1177/173 Mammalian Radiobiology 4 s.h.
Le-124, radiobiological aspects of mammalian radiobiology, proportion of 1:10; lectures and laboratory exercises dealing with radiobiological effects of organ systems in mammalian species. Topics include skin and bone, radiation-tissue interactions, irradiation of cellular organ systems, use of agents which modify radiation response; radiobiology and the response in tissues and organ transplantation, radiation carcinogenesis. Prerequisites: 1177/171 and consent of instructor.

1177/174 Cellular Radiobiology 4 s.h.
Lec-124 and laboratory; influence of radiation on cell growth, division, differentiation, and function; radiation effect on cellular system; cellular effects on cellular system; cellular effects on tumor and bone tissue in relation to responses in irradiation. Prerequisites: 1177/170 or consent of instructor.

1177/175 Radiobiology in Biological Research 4 s.h.
Course especially oriented for graduate students in the basic sciences; lectures and laboratory exercises will be on the use of radiobiology in a number of biological systems; eight-weeks emphasis on bone tissue, especially cellular metabolism containing second eight weeks dealing with some aspects of genetic studies.

1177/176 Radiobiology in Clinical Investigations 4 s.h.
Lec-124, lectures on laboratory training dealing with specific patients and use of radiobiology in laboratory studies (including 15-1, 12-1, 1-1, 9-1, 8-1, 6-1, 4-1, and 2-1). Prerequisites: 1177/175 and consent of instructor.

1177/177 Research: Radiobiology 4 s.h.

1177/178 Research: Radiobiology 4 s.h.

1177/179 Special Topics 4 s.h.

1177/180 Special Topics 4 s.h.

1177/181 Thesis 1 s.h.

1177/182 Thesis 1 s.h.

1177/183 Thesis 1 s.h.

Radiology

Department Head: James H. Chrisle

The Radiology Department's teaching program is designed to meet the variable needs and interests of fourth-year medical student in diagnostic radiology, nuclear medicine, and radiation therapy. Rotations through the various subdivisions of radiology—chest, gastrointestinal, genitourinary, head and neck, nuclear medicine, orthopedic, pediatric, special procedures, and therapy—will be designed according to the interest of each student who chooses this rotation.

Faculty Roster

Professors Christie, Cohen, Cornell, Evans, Jackson, Laurer, Osborn, Ponsen, Riey; associate professors Boone, Tuber K. Chaudhuri, Dobin, Schapir, assistant professors Tapan K. Chaudhuri, Chiu, Coop, Go, Hahn,
Courses

7:040 Clinical Urology Junior Medical Student Clerkship 2 h.
Provides intensive two-week course of study on urology wards; junior medical students are responsible for patient care under supervision of residents, including taking history, examination, diagnosis and differential diagnosis, presenting cases, and writing short reports.

7:040b Urology Grand Rounds 1 h.
Weekly review of departmental activities; students have a chance to participate in case discussions.

Faculty Roster

Professor Bunge, Colp. Placs; associate professors Bonney, Hawtry, Schmid.
78:117 Transplantation Senior Elective

Surveillance study of medicine, general surgery, pediatric surgery, pre-
paring for a career in genetics and transplant surgery as they find
clinical applications today, particularly in chronic renal failure. Each patient
conducts an individualized program of genetic and clinical review, genetic
syndrome participation by special arrangement with consultation from
clinical genetics. The patient can be placed in another section and follow-up:
Competency in genetics is emphasized and clinical, surgical, and medical
management. Detailed plans should be made of the two months at the center.

79:009 Special Studies off Campus

Surgical or clinical project consists of the student's self-designed, self-
selected project. An individual study or project may be approved by the
instructor and may be submitted with permission by the Department head upon
fulfillment of project. The project is prepared and submitted.

Urology
College of Nursing

Administrative Staff

Dean: Susan H. Berrett
Assistant Dean, Graduate Programs: Elta H. Ranum
Assistant Dean, Undergraduate Curriculum: Mildred S. Frese
Acting Assistant Dean, Undergraduate: Patricia M. Coles
Director, Continuing Education: Pearl Senske
Degree offered: B.S.N., M.A.

With the college of Medicine, Dentistry and Pharmacy, the College of Nursing is an integral part of the University Health Center, sharing in and contributing to teaching, research and patient-care resources which have earned international recognition. This provides an unusually fine setting for college preparation for nursing, because the educational and clinical resources which are needed to educate nurses are available on or near the campus. This also makes it possible for the faculty and students to participate fully in University life and to contribute their time, interest and abilities to the many general and special activities of a major and modern university.

In addition, both the baccalaureate and graduate programs are accredited by the Department of Baccalaureate and Higher Degree Programs of the National League of Nursing, the professional accrediting agency for college and university programs of nursing education.

Because The University of Iowa baccalaureate program is approved by the Iowa Board of Nursing, its graduates qualify to take the licensure examination required for practice as registered nurses.

Undergraduate Program

Nursing offers a steadily growing number and variety of professional opportunities for both men and women.

Professional nurses are in demand in a variety of jobs and settings, among them community health nursing services, doctors' offices, clinics, hospitals, armed forces, the Peace Corps, the Agency for International Development, the World Health Organization, the Red Cross, home and foreign missions, youth camps and professional organizations. A professional nurse may be engaged in clinical nursing, teaching or research.

The key words in nursing are service and science. Key personal qualities are intelligence, judgment, humor, good health, responsibility, adaptability, tolerance and compassion, and the ability to communicate.

There are four ways to prepare for nursing. One-year practical nursing, two-year associate and three-year diploma programs prepare nurses for technical practice in hospitals, doctors' offices and nursing homes.

A four-year bachelor's degree program, such as that offered by The University of Iowa, provides college-level preparation for careers in the hospital care of patients and in such community agencies as public health services, schools and industries. In addition, it provides the essential base for graduate study in nursing.

In addition to the advantages of combining general education with specific career preparation, a college or university program offers the advantages—hardly less important—of full participation in the social, cultural and recreational activities of a highly diversified campus community. In nursing no less than in other pursuits, a college or university background gives many young people the only satisfactory preparation not only to realize their highest career potentialities, but to achieve the greatest measure of self-sufficiency in life.

The baccalaureate program is designed to provide both liberal and professional education. The program consists of coursework in five areas: communication skills; the social, biological and physical sciences supportive to nursing; the humanities; the student's choice of electives; and professional nursing.

The basic 128-semester-hour program consists of 40 semester hours of general education courses, 40 semester hours of supportive pre-nursing courses and 48 semester hours of coursework in nursing. The program is designed to be flexible, so that the student may complete it in less than four academic years, or may take longer. Most students complete it in four academic years and one summer session.

Course offerings are based on the concepts of health, diseases from health and nursing intervention, and are presented in progressive levels of complexity from the sophomore through the senior year.

The curriculum reflects the current trend in health care delivery toward greater emphasis on nursing as a service rendered outside hospitals and to other than the acutely ill. The curriculum provides for nursing electives, which permits the selection of an area for beginning specialization in the senior year.

With the first nursing course, the student will have the opportunity to apply her or his learning by caring for individuals in a variety of settings.

Approach to the College of Nursing

(1) Complete the extra-credit program at Iowa, enrolling the first year in the University's College of Liberal Arts;

(2) Transfer from an institution offering a two-year sequence of specific courses approved by the College of Nursing;

(3) Transfer into the College of Nursing from an accredited junior or senior college with approved supporting courses.

Cooperating institutions in the two-year transfer plan (2) are Iowa State University at Ames, the University of Northern Iowa at Cedar Falls, Upper Iowa College at Pineville, Bower Cliff and Morningside colleges at Sioux City, Loras College at Dubuque, Iowa Central Community College at Fort Dodge, North Iowa Community College at Mason City, Area VI Community College at Marshalltown and Eastern Iowa Community College at Muscatine. Additionally, a two-year program as the regular plan has been developed with Luther College at Decorah. Completion of the two-year transfer sequence at a cooperating institution does not guarantee admission to the College of Nursing; admission standards for two-year transfers are the same as for
all other College of Nursing applicants. Prospective two-year transfer students who want more information about this plan should contact the cooperating institution of their choice.

Registered Nurses
With some modifications, registered nurses who enroll in the baccalaureate program at Iowa should credit special information and advisement from the College of Nursing.

Admission
High School Background
There are no specific high school course requirements for admission to the College of Nursing, but the College strongly recommends 4 years of English, two years of history, two and a half years of mathematics and one year each of biology, chemistry and physics, plus other college preparatory courses selected with the help of the high school counselor.

College Background
Applicants for admission to the undergraduate program in nursing must present a minimum of 30 semester hours completed in an accredited college, including three biological science courses in partial fulfillment of pre-nursing requirements, and satisfaction of these general education requirements:

- Junior Year: Eight semester hours (may be satisfied by testing for advanced standing, and if the student has earned six semester hours of credit in English composition, the speech component may be completed after admission);
- Mathematics—Two and one-half years of high school mathematics or a satisfactory score on the mathematics battery of the American College Test, or completion of a college course in mathematics-comparable to or higher than intermediate algebra (Mathematics 22M1); and
- Chemistry—High school chemistry or its equivalent (If taken at the college level it may be included in the 30 semester hours required for admission);
- Physics—High school physics or its equivalent (If taken at the college level, it may be included in the 30 semester hours required for admission).

Four semester hours in the historical-cultural core area and four in literature are required for graduation in nursing, and may be included in the 30 semester hours presented for admission.

Standards
To be considered for admission to the College of Nursing, the applicant should have a cumulative grade-point average of at least 2.2 on a 4-point scale for all college coursework taken.

The American College Test
All applicants for admission to the University of Iowa must comply with the American College Test. For information on this test, write to the American College Testing Service, Box 451, Iowa City, Iowa 52240.

Selection Factors
Fulfillsment 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. A physical examination is required prior to final admission.

Application Deadlines
Applications must be received by February 15 for the fall semester, June 15 for the spring semester and November 15 for the summer session. Early application is urged.

Pre-Nursing Requirements
Including the biological science courses required for admission to the College, the student must satisfy the following requirements before beginning clinical nursing coursework:

- Animal Biology 3 s.h.
- Chemistry (Organic and Biochemistry) 5
- Anatomy 4
- Physiology 4
- Microbiology 4
- Nutrition 3
- Psychology 4
- Sociology 4
- Anthropology 4
- Human Development and Behavior 3

Faculty Advisors
Advisors from the College are available to help prospective nursing students plan their programs, and each student in the College works with a faculty advisor.

Expenditures
Students pay the general University fees throughout the program, and purchase their own uniforms. The cost of a uniform order, including three uniforms and two caps, currently is about $60. Students must also purchase white sheets, linens and a watch with a full-wind second hand. Students may need to provide their own transportation to and from clinical nursing courses.

Financial Aid
In addition to the assistance available to University students generally, there are assistance programs specifically for nursing students. These include the Nursing Student Loan and Scholarship Program and the Army and Navy nurse programs. For further information about financial assistance, write to the University Office of Student Financial Aid.

Student Organizations
College of Nursing students have their own Association of Nursing Students and are also eligible for membership in the state and national associations of nursing students.

Master of Arts
Accredited by the National League of 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. Curricula are designed in three semesters, or two semesters and a summer session.

### Degree Requirements
Thirty-two semester hours are required in each major for the master's degree.

#### Medical-Surgical Nursing
96:120 Introduction to Methods of Nursing Research 3 s.h.
96:220 Research in Nursing Research 2 s.h.
96:232,233 Advanced Medical-Surgical Nursing 12 s.h.
96:299 Thesis 6 s.h.
Electives from one related area (physiological or behavioral sciences) 9 s.h.

#### Nursing of Children
96:120 Introduction to Methods of Nursing Research 3 s.h.
96:220 Nursing Research 2 s.h.
96:128 Perspectives in Nursing 2 s.h.
Electives (from relevant areas) 11 s.h.
Thesis 7 s.h.

#### Psychiatric Nursing
96:120 Introduction to Methods of Nursing Research 3 s.h.
96:220 Nursing Research 2 s.h.
96:128 Perspectives in Nursing 2 s.h.
96:250-258 (Courses in Advanced Psychiatric Nursing) 15 s.h.
Electives from a related field 13 s.h.
Thesis 6 s.h.

#### Nursing Service Administration
96:120 Introduction to Methods of Nursing Research 3 s.h.
96:220 Nursing Research 2 s.h.
96:128 Perspectives in Nursing 2 s.h.
96:260,262 Nursing Service Administration I, II 13 s.h.
96:268,269 Clinical Nursing I, II 6 s.h.
Electives 6 s.h.

### Admission
Graduate students in nursing register in the Graduate College and degrees are conferred by that College. The general admission requirements of the Graduate College apply (see "Graduate College"), with the following special requirements:

- Evidence of fulfillment of legal requirements for the practice of nursing (licensure in Iowa is not required); a grade-point average of 2.7 in the baccalaureate program, or demonstrated ability in graduate courses as stipulated by the Graduate College (conditional admission with grade-point average of at least 2.5, or, for the purpose of taking non-nursing courses, with grade-point average of not less than 2.5);
- An elementary course in statistics is required prior to admission or concurrently with the first research course.

Registration for elective requirements is possible in any term, but initial enrollment in advanced nursing courses which are offered sequentially is usually in the fall semester.

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 six 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 non-thesis students. A written general examination is required of all degree candidates.

#### Continuing Education
The College offers units of instruction to groups of registered nurse practitioners. The purpose of the continuing education program 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; however, continuing education units may be assigned to each offering (one unit per 10 clock hours of instruction).

#### Pediatric Nurse Practitioner Training Program
This four-month certificate program jointly offered by the Department of Pediatrics of the College of Medicine and the College of Nursing prepares registered nurses to function as pediatric nurse practitioners in an expanded role on child health care teams, in clinics and in private pediatrics' offices. Program requirements:

- 96:142 Nursing Seminar for Pediatric Nurse Practitioners 3 s.h.
- 70:100 Fundamentals of Primary Child Health Care for Pediatric Nurse Practitioners 3 s.h.

Clinical experience in the care of children is provided in the University of Iowa Hospitals and Clinics and under preceptors in the local setting. The program can be completed in one semester with class and preceptor at the University two days per week and further practicum where employed.

### Admission
Applicants must be registered to practice professional nursing in Iowa (or be eligible for licensure by endorsement) and must be
cases focusing on individuals exhibiting maladaptive psychosocial behaviors. Prereq:\- aptitude of instructor.

96:252 Nursing Care of Disturbed Family 3 s.h.
Assessment of family dynamics, nursing intervention and evaluation of interven-
tion in disturbed family situations. Prerequisite: consent of instructor.

96:253 Nursing Intervention in Groups 3 s.h.
Group dynamics, group process and psychopathology in nursing intervention with
groups of people. Prerequisite: consent of instructor.

Exposition of trends and issues related to psychiatric nursing practice. Prereq-
quisite: six s.h. of advanced psychiatric nursing.

96:256 Seminar in Advanced Psychiatric Nursing Care 3 s.h.
Study and selected practical experiences relating to nursing intervention with se-
ligated age groups or a specific treatment modality. Prerequisite: six s.h. of ad-
vanced psychiatric nursing and consent of instructor.

96:257 Advanced Practicum in Psychiatric Nursing 3 s.h.
Study and application of psychiatric nursing theory and intervention techniques
with individuals, families or groups. Prerequisite: introductory course related to
the proposed experiences and consent of instructor.

96:258 Practicum in the Teaching of Psychiatric Nursing 3 s.h.
Observations and selected teaching experiences in psychiatric nursing. Prereq-
quisite: six s.h. of advanced psychiatric nursing and two of the following: Education

96:260 Nursing Service Administration I 3 s.h.
Administrative concepts and organizational theory central to understanding com-
plex nature of modern community hospital: small group discussion using case
method of nursing service administration.

96:261 Nursing Service Administration II 3 s.h.
Functions of nursing departments in complex hospital: group discussion of case
administration issues and analysis of action alternatives. Prerequisite: 96:260.

96:262 Nursing Service Administration III 3 s.h.
Prerequisite: 96:262.

96:266 Clinical Nursing I 3 s.h.
Clinical nursing practice: concepts and practices. on-site Clinical Nursing II
clinical nursing practice: concepts and practices.

96:269 Supervision in Nursing 3 s.h.
Supervisory process in providing nursing care in health agencies.

96:299 Thesis
Administrative Staff
Dean: Dale E. Wunker
Associate Dean: Louise C. Zapf
Coordinator, Pharmacy Practice Services: John L. Leach
Assistant Dean: Joseph G. Cano
Coordinator, Pharmacy Extension Services: Wendie L. Kerr
Coordinator, Hospital Pharmacy Education: C. Douglas Nepler

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 serves his 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 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, who rely on the pharmacist for information about various drugs, their availability, activity, toxicology, contraindications, etc.

Nearly everyone is familiar with the community pharmacist and the pharmacy in which he or she practices. The size and type of practice may vary—community pharmacies may be large or small, operated by individuals or by corporations. The pharmacists who staff these pharmacies make up the majority of practitioners. Over 100,000 men and women practice in community pharmacies.

Another smaller group of pharmacists is employed in hospital pharmacy work. The government also employs pharmacists in the Public Health Service and the armed forces.

An area which has a growing need for pharmacists is industry. This includes pharmaceutical manufacturing, where pharmacists are found in various areas of research, development, manufacturing, control, marketing and advertising. In addition to these pharmacists, numerous others are employed in pharmaceutical sales. Pharmacy training is especially valuable to these men and women who are responsible for acquiring physicians, dentists, veterinarians and other pharmacists with drug products.

In the United States more people are receiving total health care than ever before. This expansion of health care will continue. Young men and women in pharmacy will face new challenges, expanded responsibilities and an ever-increasing growth in opportunities.

Bachelor of Science Program
Students in the College of Pharmacy are in a Bachelor of Science program, and they receive professional training and education in a number of areas. These include pharmacy technology, biopharmaceutics, medicinal chemistry and natural products, pharmaceutical economics, clinical and hospital pharmacy.

The Colleges 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.

Basically, the Bachelor of Science program in pharmacy consists of one year of pre-pharmacy study, 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 study includes, in addition to the basic preprofessional requirements, at least eight semester hours of organic chemistry, from five to eight semester hours of biology or zoology, three or four semester hours of economics and three to four semester hours in quantitative analysis.

The professional curriculum includes a minimum of 18 semester hours of electives; eight of these must be taken in the fourth professional year. By choosing appropriate electives, the student may focus on such special areas as clinical or hospital pharmacy or pregraduate study.

The Professional Curriculum
First Year
First Semester
46:13 Pharmacy Math 3
37:3 Principles of Animal Biology 5
4:123 Organic Chemistry I 3
4:11 Elementary Quantitative Analysis 4
Total semester hours 15

Second Semester
46:14 Pharmacy: Orientation 2
60:1 Principles of Economics 4
4:122 Organic Chemistry II 3
4:141 Intermediate Chemistry Laboratory I 2
Anatomy* 3
Elective** 3
Total semester hours 17

* Also offered first semester for students on a 2-3 program only.
** Eighteen s.h. of electives are required. At least eight s.h. of this total must be taken in the P-4 year.
Second Year

First Semester
46:23        Pharmacology I 4
99:152       Biochemistry for Pharmacy Students 4
61:157       General Microbiology 4
Anatomy*      3
Total semester hours 15

Second Semester
46:24        Pharmacology II 4
46:22        Pharmaceutical Economics 4
46:128       Medicinal Chemistry: Natural Products I 4
72:150       Intermediate Physiology (Human) 5
Total semester hours 17

* This may be taken in second semester of first year.

Third Year

First Semester
46:131       Medicinal Chemistry—Natural Products II 4
71:101       Pharmacology 5
46:35        Pharmaceutical Economics 3
Total semester hours 15

Second Semester
46:132       Medicinal Chemistry—Natural Products III 4
71:103       Pharmacology and Toxicology 3
46:38        Pharmaceuticals II 3
46:110       Clinical Pharmacy: Case Study 3
Electives 3
Total semester hours 16

Fourth Year

First Semester
46:111       Clinical Pharmacy: Clerkship 4
46:43        Pharmaceutics IV 3
46:41        Jurisprudence 2
Electives*    4-6
Total semester hours 13-15

Second Semester
46:112       Clinical Pharmacy: Clerkship 4
46:107       Hospital Pharmacy: Survey 3
Electives*    4-6
Total semester hours 8-10

* A minimum of 8 s.h. of electives must be taken in the P-4 year.

Professional Electives
46:36        Institutional Practice 2
46:48        Community Pharmacy Operations 2
46:32        Senior Seminar 1
46:56        Nonprescription Drugs 2
46:101       Pharmacy: Projects 1-3
46:104       Biopharmaceutics 2
46:106       Industrial Pharmacy 3
46:107       Hospital Pharmacy: Survey 3
46:108       Hospital Pharmacy: Survey 3
46:114       Clinical Pharmacy: Advanced Clerkship 4
46:135       Pharmaceutical Chemistry: Drug Analysis 3
46:138       Introduction to Natural Product Research 1-2

Graduation from the baccalaureate program in pharmacy requires the student to complete satisfactorily the required courses in addition to 18 semester hours of electives and to achieve a minimum grade-point average of 2.0 for all work undertaken.

Academic Probation
The grade report of each student in the College will be evaluated after each semester and any student whose cumulative grade-point average falls below 2.0 will be placed on academic probation. A student placed on academic probation cannot enroll for more than 12 semester hours.

Pass-Fail
Only non-required courses may be taken on a pass-fail basis, with permission of the advisor and the course instructor must be obtained. A student may take only one course per semester on a pass-fail basis, and may earn no more than 16 semester hours of credit on a pass-fail basis while enrolled in the College.

Credit by Examination
A student may earn up to 12 semester hours of credit by examination. Selected tests from the College-Level Examination Program (CLEP) are used under the general policy outlined by the College of Liberal Arts.

Second-Grade-Only Option
A student enrolled in the pre-pharmacy or pharmacy program may repeat a course, and have only the grade and credit of the second registration used in calculating his or her University of Iowa cumulative and total cumulative grade-point averages. This option may be applied to a maximum of 16 semester hours of work. A student wishing to exercise this option should apply to the Office of the Dean of Pharmacy.

Waiver of Substitution of Required Courses
A student wishing to effect substitution for or waiver of a required course must petition the Chairman of the Admissions and Suspensions Committee at least two months prior to the semester in which the proposed substitution or waiver is to be made. A student who intends to take a required course at another institution and the dean and the advisor prior to registering for the course.

Cancellation of Registration
A student in good academic standing who cancels registration during the final four weeks of a regular semester or during the final three or two weeks of a twelve- or eight-week summer session, respectively, will not be permitted to enroll for the immediately following semester without specific approval of the Dean. A student on scholastic probation who cancels registration at any time without good cause will be considered to have been dismissed for poor scholarship. A student whose registration is canceled or who cancels registration will not be permitted to register again without specific permission of the Dean.

Drop Date
The last date for dropping courses without penalty is at the end of the tenth week of the semester or the fifth week of the summer session.
Correspondence Study
Except with permission from the Dean, a student may not take a course by correspondence while he or she is enrolled in the College.

Admission
The college-level work outlined below is the minimum academic requirement for admission to the College of Pharmacy:
- Rhetoric: eight semester hours, or six hours of transfer credit in English composition and rhetoric and two hours in speech
- General chemistry: eight semester hours
- Mathematics: three semester hours equivalent to analytic geometry or a higher mathematics course
- Physics: a one- or two-semester course in basic physics (at Iowa, 29.3 Basic Physics). A suitable biology or zoology course may be taken instead; physics will then be taken in the first professional year.

Students who have minor deficiencies in meeting the above requirements may be admitted to the College upon recommendation of the Chairman of the Admissions Committee and the approval of the Dean. The applicant must have earned a 2.0 (A = 4) cumulative grade-point average on all college work attempted.

Transfer Students
Students who transfer into the College 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 and quantitative analysis. Students who plan to remain in a community college for two years before transferring to the College should consult the Dean of the College 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 (30 semester hours) of residence in the University of Iowa College of Pharmacy is required for the degree.

Students transferring from non-pharmacy colleges receive credit for work required in the Bachelor of Science curriculum in pharmacy, but are still subject to the licensure requirement of at least three years in an accredited college of pharmacy. A minimum grade of C is required for work applied by transfer toward the pharmacy degree.

Graduate Programs
The College has active graduate programs in several areas. Master of Science and Doctor of Philosophy programs are available in pharmaceutical sciences, medicinal chemistry—natural products, and pharmaceutical socioeconomics. A Master of Science degree is available in clinical-hospital pharmacy.

Advanced study in the pharmaceutical sciences prepares the student for opportunities in research, teaching and/or administrative positions in the pharmaceutical, chemical and agricultural chemical industries, in colleges and universities, in government agencies and in a number of health-related institutions and organizations.

For further information about graduate study in any one of the pharmaceutical sciences, write to the Dean, College of Pharmacy, The University of Iowa, Iowa City, Iowa 52242.

Facilities
The Pharmacy Building is located in the Health Center complex on the University's main campus, in close proximity to the Colleges of Medicine, Nursing and Dentistry, University Hospitals, the Basic Sciences Building and the Health Sciences Library. The Pharmacy Building is a five-story structure especially designed to provide modern facilities for a comprehensive program of pharmacy education. In addition to classrooms, an auditorium and library, the building houses well-equipped separate laboratories and a greenhouse for instruction at the undergraduate and graduate levels.

The College's extensive industrial pharmacy laboratory serves as a teaching unit as well as a service division of the College. Here undergraduate and graduate students have the opportunity to learn methods of large-scale pharmaceutical product development.

The Hospital Pharmacy is a teaching unit of the College of Pharmacy; it supplies all medicines and related necessities to the University's General, Children's and Psychopathic hospitals.

In the Clinical Pharmacy program, students work with other health professionals and have the opportunity to monitor drug therapy in hospitalized and non-hospitalized patients, under the supervision of clinical instructors in pharmacy and medicine. Among the various rotations in which the students are involved are many areas of the University and Veterans Administration hospital, the Oakdale Family Practice Clinic, the Iowa Medical Security Facility, Cedar Rapids Mercy Hospital, selected community pharmacies and nursing homes, the Iowa Drug Information Service and the College of Pharmacy's Department of Pharmaceutical Services.

Faculty Roaster

Undergraduate Pharmaceutics
4613 Pharmacy: Math 3 a.h.
Application of systems of weights and measures and mathematical calculations involved in pharmaceutical procedures and practice. Includes introductory calculus and its application to pharmaceutical problems.
4614 Pharmacy: Orientation 3 a.h.
Ethics, organization and development of the science and profession of pharmacy.
4622 Pharmaceutics I 4 a.h.
Lecture and laboratory on particle size measurement, characteristics of small particles, properties of solvents, formulation, preparation and evaluation of solid dosage forms. Prerequisite: 4613. Chemistry 4.131. Physics 29.3.
4624 Pharmaceutics II 4 a.h.
Lecture and laboratory on application of physical and chemical laws to the formulation and preparation of liquid dosage forms, including solutions, colloidals and emulsions. Prerequisite: 4623.
4626 Pharmaceutics III 3 a.h.
Fundamentals of drug chemistry and physiological and pharmaceutical factors affecting drug absorption; effect of product design and manufacture on drug availa-
Graduate Pharmaceutics

42/131 Pharmacy: Projects
Basic and applied research problems of pharmaceutical significance. Prerequisites: senior or graduate standing.

42/132 Physical Pharmacy
Sulfur and metalloproteins. Therapeutics and problems in pharmaceutical sciences.

42/134 Biopharmaceutics
Mechanisms of drug absorption, enterohepatic circulation, drug disposition, and metabolism in pharmaceutical sciences.

42/135 Industrial Pharmacy
Current knowledge and state of practice in production of pharmaceuticals. Prerequisites: 42/134.

42/102 Contemporary Research Problems
Review of current research problems in pharmaceutical sciences.

42/106 Stability of Pharmaceuticals
Mechanisms of degradation of pharmaceuticals; studies of shelf-life of pharmaceuticals; stability in animal and human systems. Prerequisite: Chemistry 41/12.

42/112 Pharmacy: Selected Topics
Lauderdale and dissemination of current knowledge in graduate studies in pharmaceutical sciences. Industrial pharmacy may be offered for credit.

42/121 Quality Control
Lecture and laboratory; instrumental analysis as applied to pharmaceutical quality control; theory and applications of spectrophotometry, Karl Fisher titrations, nmr, and paper and column chromatography, etc. Experimental laboratory work, library reading, lectures and conferences; problems related to problems of pharmaceutical preparations as industrial scales, comprehensive paper or results of work.

42/123 Continuation of 42/121.

42/126 Product Development
Applications of physiological and physiological principles in formulation and design of pharmaceutical dosage forms.

42/128 Product Development
Continuation of 42/126.

42/129 Advanced Biopharmaceutics
Efficiency of physical-chemical properties and pharmaceutical manipulations as drug availability considered; emphasis on use of solubility from various design forms and formulations. Prerequisites: Mathematics 3310, Chemistry 41/12.

42/121 Pharmacy: Seminar
Analysis and reporting of advanced research in pharmaceutical sciences; requirement of all students writing senior thesis; may be repeated.

42/228 Pharmacometrics: Research
Pharmacokinetics and related fields. Methods of assay, mechanism of action, dosages, routes, and pharmacological and toxicological properties.

42/122 Medicinal Chemistry—Natural Products
Undergraduate Medicinal Chemistry—Natural Products

42/128 Medicinal Chemistry—Natural Products I
First of a three-semester sequence; lectures and laboratory on origin and isolation, chemical, physical, and biological properties of natural products. Prerequisites: Chemistry 41/12, Biochemistry 41/12, or equivalent; Mathematics 3310 or equivalent.

42/131 Medicinal Chemistry—Natural Products II
Continuation of 42/128 with emphasis on natural products.

42/132 Medicinal Chemistry—Natural Products III
Continuation of 42/131 with prerequisite.

42/124 Medicinal Chemistry—Drug Analysis
Theory and application of modern instrumental procedures for assay of medicinal agents: spectroscopy on chromato, physical, biological, and instrumental techniques. Prerequisite: consent of instructor.

42/125 Introduction to Natural Product Research
An elective laboratory course designed to give students in-depth exposure to techniques and problems encountered in natural product research including isolation and characterization of naturally occurring compounds; plant tissue culture; fermentation chemistry; biochromatography of organic compounds. Prerequisites: 42/132.

Graduate Medicinal Chemistry—Natural Products

42/306 Conformational Analysis
Basic concepts of conformational analysis; recent references on subject; application of this science in design and synthesis of biologically active molecules. Prerequisite: Chemistry 41/12.

42/207 Spectrometric Interpretation
Interpretation of ultraviolet, infrared, nuclear magnetic resonance, optical rotatory dispersion and other spectrophotometric data; discussion of correlation of medicinal data and application to medicinal chemical research.

42/208 Vibrational Spectroscopy
Lasers, stimulated emission, infrared, nuclear magnetic resonance, optical rotation dispersion and other spectrophotometric data; discussion of correlation of medicinal data and application to medicinal chemical research.

42/134 Chromatographic Methods
Theory and application of adiabatic, gel filtration, electrophoresis, isoelectric and ion exchange chromatography; parfes on the applicability of ultraviolet, color, gas, and other types of high performance liquid chromatography. Prerequisites: consent of instructor.

42/135 NMR Spectroscopy
Dissociation, primarily from current literature, of advanced nmr techniques and methods of analysis and applications of nmr techniques in fundamental and applied chemistry. Prerequisites: 42/315, Chemistry 41/12.

42/136 Aspects of Synthetic Chemistry
Theory and application of modern theoretical concepts in organic chemistry as fundamental and applied chemistry. Prerequisites: 42/135 in chemistry.

42/137 Medicinal Chemistry—Natural Products Research
Research in isolation and characterization of natural products. Prerequisites: 42/131 in chemistry.

42/139 Physiochemical Methods
Methods in isolation, distribution, isolation of primary and secondary natural products. Prerequisites: laboratory and instrumentation techniques of handling and storing biological materials discussed; emphasis on methods of isolation, including all physical and chemical techniques appropriate to the isolation of natural products. Prerequisites: Chemistry 41/12, Biology 41/12, or equivalent.

42/292 Antibiotics
Discussion of most commonly employed antibiotics, chemical history, production, exploration of isolation and detection and chemical properties of antibiotics, methods of assay, mechanism of action, resistance, uses. Prerequisites: consent of instructor.
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 truths, the ideals and the spirit of the several departments and colleges of the University and by bringing the University generally into direct contact with the citizen." The Division's organization and services include:

**Bureau of Instructional Services**

**Correspondence Courses**

Correspondence courses are available for credit toward a degree, 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 correspondence courses for degree credit.

Correspondence study is offered in accounting, anthropology, art, business administration, chemistry, Latin, economics, education, English, French, geography, history, home economics, journalism, library science, mathematics, music, physical education, police science, political science, psychology, religion, social work, sociology, Spanish and speech pathology.

There is a $5 enrollment fee. The course fee is $20 per semester hour. Fees are payable at the time of registration. A catalog including procedure and enrollment forms may be obtained from Correspondence Study, The University of Iowa, Iowa City, Iowa 52242.

**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 test materials. Personnel should visit their Education officer.

**Veterans Administration Courses**

Veterans may enroll for correspondence courses concurrently with other academic study under Public Law 92-540. Veterans are referred to Veterans Affairs Office, Jessop Hall, The University of Iowa.

**Extension Classes**

The Division offers a limited number of off-campus extension classes 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; courses in liberal arts and education require a minimum of 20 enrollees. For information, write Extension Program, The University of Iowa.

**External Studies Program**

Credit coursework for students who wish to study abroad is available. See "Office of International Education and Services." The Saturday Class Program

This program provides credit and noncredit course offerings for part-time undergraduate, graduate or unclassified students at a tuition rate of $30 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. For a Saturday Class catalog, write to the Extension office.

**Adult Education Advisory Service**

This office provides consultative and guidance service on organization, techniques, subject matter and other aspects of continuing adult education in the community.

**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 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 this one source to save time and transportation costs. Orders received for terms regularly carried in stock are usually shipped within 24 hours. Items not carried in stock are furnished as a special service at the carrying charge above the publishers' price. Catalogs are available.

**Center for Conferences and Institutes**

The Center serves as the principal agency of the University for developing, coordinating and conducting noncredit continuing education programs for nonresident adults and for administering the University's Continuing Education Unit (CEU) program. The Center's primary goal is to enhance the usefulness of the University as a center of learning, and to provide educational opportunities to people who are no longer full-time students but who seek new knowledge related to their jobs, professions or special interests.

Each year more than 22,000 adults receive training in the Center's varied programs, which represent a cooperative endeavor between the Center and the various colleges, departments and disciplines within the University. The marshaling of appropriate resources, coupled with the professional planning and execution of conferences and other short-term training programs, help to ensure the achievement of the educational objectives specified for each training meeting.
The Director of Conferences is responsible for approving and conducting or coordinating all conferences, institutes, short courses and similar noncredit programs held in the Iowa Memorial Union for other than on-campus student groups. All members of the faculty and staff who plan University conferences and other University-related group functions to be held on campus (in the Iowa City-Cedarville community) are expected to utilize conference facilities, dining services and lodging accommodations at the Iowa Memorial Union, to the extent they are available and appropriate.

Radio Broadcasting Services
WSUI and KSLR-FM serve the interests and needs of the people of eastern Iowa with a broadcasting service which extends the reach 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 contributes program materials to a national network of more than 140 noncommercial radio stations.

Institute of Public Affairs
The mission of the Institute is to help improve state, city and country governments in Iowa by serving as the primary research and continuing education link between the University and those governments. Services of the Institute are available to state and local government agencies and to citizen groups interested in civic affairs.

The Institute has a full-time research and training staff. Through the Institute, other resources of the University are applied to problems faced by Iowa public officials. The Institute also works in close cooperation with organizations of public officials such as the League of Iowa Municipalities and the Iowa State Association of Counties.

The Institute provides:
Training and continuing education services to public personnel, offering a wide variety of courses and programs aimed at meeting individual and organization needs as well as professional goals;
Research services, informational resources and publications ranging from practical handbooks to issue papers; and
Consultation services, ranging from answering "how-to" questions to serving on state-wide government committees dealing with major concerns of state and local governments.

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.

Transportation Safety Research Center
The Transportation Safety Research Center was organized in 1958 to provide a focal point for research in transportation safety matters. Its activities other than research include development and conduct of a demonstration project to create an analytic and management capability in highway safety programs in selected Iowa counties, and the production of public education materials in traffic law enforcement. TSRC serves as a catalyst for transportation safety activities.

Iowa Center for Education in Politics
Supported by gifts from foundations and others and headquartered in the Division of Extension and University Services, the Iowa Center for Education in Politics coordinates activities at all colleges and universities in Iowa, to encourage students to become active in political affairs. The Center also sponsors programs to help teachers improve their teaching about politics at the high school level. These programs are planned in cooperation with leading organizations of the political parties of the state and college teachers and administrators.

Iowa Program IMPACT
The Service as administrative and fiscal agent for Iowa Program IMPACT, 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, recommending appropriate activities which will assist in solving those problems and approves proposed projects 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 activity beyond state lines.

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 the 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.

MacCredie Field Campus
The University holds a lease from the U.S. Army Corps of Engineers on two tracts of land in the Coralville Reservoir area north of Iowa City. The two tracts total approximately 620 acres. One tract is identified as a 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.
High School Debating and Public Speaking
In cooperation with the Department of Speech and Dramatic Art, the Division sponsors cross-examination debate, extemporaneous speaking, original oratory, dramatic interpretation, oral interpretation, news commentary on radio, expository speaking on television and student senate activities among high schools of the state, assists schools in the collection and distribution of materials and conducts debates and contests.

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 include:

Media Development
The Audiovisual Center staff is available to assist clients in the solution of their instructional problems related to the planning and design of learning systems, facilities and media. Short-term assignment to the Audiovisual Center of faculty and/or graduate assistants also is encouraged.

Media Library
Major collection of 16mm motion pictures and magnetic tape recordings, as well as limited collections of slides, filmstrip, disc recordings and overhead transparencies, are available through the Media Library. Catalog of materials are published periodically. Systematic additions to these collections are made according to requests and funds available. No charge is made for films used in classroom and other curriculum-related activities. A rental fee is charged for off-campus use of these films. Tapes are obtained at a nominal charge for materials and duplication.

Campus Service
Audiovisual equipment available for use includes film, slide, filmstrip, equipment; overhead projectors; audio tape recorders; record players; portable videophone recorders; portable public address systems; and display devices (exhibits, easels, boards). For classroom and other curriculum-related activities equipment is provided at no charge. There is a nominal charge for off-campus equipment and projectionist service.

Media Production
A staff of production technicians and artists, complemented by professional facilities and equipment, produces graphs, charts, maps, titles, layouts, posters, illustrations, models, exhibits and overhead transparencies; black and white and color photographs, negatives, microfilm, slides, portraits, microphotographs and all types of specialized photography; motion pictures, videotapes, filmstrips, production scripts, narration and audio tapes. Still photograhic 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 need arise through cooperative arrangements between the Audiovisual Center and departments, schools, colleges and other service agencies. Currently they include the Medical Audiovisual Center, Dental Audiovisual Center, Nursing Audiovisual Center, the Educational Media Laboratory and the Music Audiovisual Center.

Publications and Printing Service
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 the planning, editing and designing of 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. The Department also operates Campus Stores, an on-campus distribution agency which sells manuals, tab notebooks and other special instructional materials.

University Press
The University of Iowa Press is the agency of the University established to publish the significant results of scholarly research. The imprint is controlled by the University Editorial Board, composed of faculty members and students appointed by the Vice-President for Research and Dean of the Graduate College. The University director of publications directs the operation of the Press.
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 school and home participation in a routine program of oral hygiene and correct dietary habits. The corrective phase is assisted 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.

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.

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 Hospital—Medical and surgical treatment of patients referred by physicians.
Psychopathic Hospital—Care, treatment and maintenance of committed and voluntary patients.
State Hygienic Laboratories—State bacteriological laboratory service to city, county and state governments, physicians and others.
University Hospital School—Evaluation, management, special education and research pertaining to physically handicapped and mentally retarded children (See "University Hospital School")
Oxalate Hospital—Treatment of tuberculosis and rehabilitation of patients with other chronic diseases.

Hospital School
A University-affiliated facility dealing with the problems of physically handicapped and mentally retarded children and young adults, the School is located in the Health Center Complex on the University's west campus.

The School's interdisciplinary team approach provides services involving the fields of medicine, dentistry, nursing, nutrition, speech and audiology, physical and occupational therapy, recreational therapy, psychology, social work, special education, physical education, homemaking-family living, music and prevocational and vocational activities.

Through the daily outpatient clinic many of the handicapped individuals are followed periodically in monitoring their progress and providing guidance to parents or others for management at home. Recommendations and guidance of local schools and other management facilities providing programs for these people is an equally important service.

The residential program provides a variety of educational and therapeutic services for Iowa children and young people whose physical handicaps make it impossible for them to attend their local schools or to achieve adequate progress in their home communities. One important goal is to return these individuals to their local communities as soon as practical, the duration of stay in the University Hospital School varies according to the needs of the enrollee.

The day program provides special education, therapy and functional training for selected children and young people who are mentally retarded and who reside in the surrounding geographic area. Up to 75 children can be accommodated.

Professional training at the School is largely for prospective workers in some aspect of programs for the handicapped. It is designed to provide learning experiences for college, junior college and university students, for care center staff, either in or outside the University, and for professional people interested in this field. Furthermore, many refresher training opportunities are arranged for those already engaged in working with the developmentally disabled. Over 900 college and university students at graduate and undergraduate levels are involved with significant training and instruction at the facility each year.

The School's research objective is to increase knowledge about any aspect of developmental disabilities, handicapping conditions and related problems, and to provide for the dissemination of pertinent findings. This is carried out not only by the staff but the various students as part of their educational and training programs.

Iowa Mental Health Authority
Authorized by Congress under Public Law 79-487 in 1946 and placed at the Psychopathic Hospital by the Iowa General As-
sembly in 1947, the Authority is the central administration for Iowa's 28 community mental health centers, which are primarily nonprofit corporations. The Authority provides consultation, staff development, recruitment, standards-evaluation and research for services for these centers. The Authority contracts with commu-
nities for developing local services; performs liaison and planning activities with other local, state and federal programs in the mental health delivery system; and provides consultation on federal mental health construction and staffing grants through the National Institute of Mental Health.

State Services for Crippled Children
Crippled children's services are supported by federal appropri-
ations through the United States Department of Health, Edu-
cation, and Welfare and by state appropriations through the University Hospitals. The purpose of SESC is to provide a state-wide pro-
gram of services for Iowa children with special health problems and multiple handicaps. Health services are available to any per-
son under the age of 21.

Diagnostic and evaluation services are offered at field clinics conducted annually in communities throughout the state and at clinics of the University of Iowa Hospitals. Medical examiners at the field clinics are staff members in the departments of Pediat-
rics, Orthopedic Surgery and Otolaryngology. Diagnostic ser-
"vices are also provided in the areas of speech pathology, audiology and clinical psychology.

SESC field consultants (public health nurses and medical so-
cial workers) provide continuing help to families in their own communities as well as at clinics. They also participate in the community in the creation of resources and programs of care.

The agency conducts research in the cause and treatment of special health problems related to handicaps, such as rheumatic fever, cystic fibrosis, phenylketonuria, muscular dystrophy, mental retardation and high-risk conditions of the newborn.

SESC operates a state program in audiology and speech pathology within the University.

Wendell Johnson Speech and Hearing Clinic
See "Speech Pathology and Audiology."

Iowa Center for the Arts
Located along the west bank of the Iowa River, the Iowa Center for the Arts is a major cultural resource, not only for the Uni-
versity community but for the people of the state and region. The Center comprises many of the academic units of the Divi-
sion of Fine Arts in the College of Liberal Arts, together with the Museum of Art, E. C. Mabie Theatre, Clapp Recital Hall and Harper Hall in the School of Music, and Hancher Auditorium, the Center's largest and longest showcase.

Hancher Auditorium
Opened in the fall of 1972 as the newest addition to the Iowa Center for the Arts, Virgil M. Hancher Auditorium is one of the nation's foremost facilities for a full range of programs in music, dance and theater. Although its 2,684 seats make it one of the United States' largest modern theaters, its design, coordinating functional with audiospatial excellence, achieves unusual intima-
cy. The Auditorium is named after Virgil M. Hancher, president of the University 1940-64.

Museum of Art
Impetus for the construction of the University’s Museum of Art came from Owen and Leone Elliott, when they offered their na-
erth art collection to the University. Opened in 1969, the Mu-
seum is located immediately north of the School of Art and Art History in the Center for the Arts complex along the west bank of the Iowa River. The Museum provides an architecturally unique setting for the widely representative works of the Elliott collection and the University’s permanent collection, and for important touring exhibits. Addition of the Carver Galleries in 1974 significantly increases the Museum’s display capacity.

Museum of Natural History
To meet the needs of the general public and the various depart-
ments of the University, the Museum provides a repository and the proper care for specimens which come to the University by gift or through the efforts of its own collectors. It de-
designs and executes traveling exhibitions of educational value and offers instruction in the conceptual and technical phases of exhibit preparation and the general operational procedures of small sci-
encemuseums.

Habitat exhibits of North American mammals include the American bison, the moose, the mountain lion, the American moose and the beaver.

A large and well-known bird habitat exhibit is the Layton Is-
land Cyclorama. This is a complete representation of a bird is-
land of the Hawaiian group. Other habitat exhibits include The Bering Sea, the Louisiana Swamp, the Full Migration and Caves 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 invertebrate phyla are represented in several exhib-
ties and include such similar 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, includ-
ing 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.

Public Information and University Relations, University News Service
The Office of Public Information and University Relations is the University's News Service that fosters understanding be-

between the University community and generally, of the Uni-

versity's aims and activities.

Public Relations/University Relations publishes Spectator, Fac-
ulty Newsletter, Staff Newsletter, University Operations Manual, Campus Correspondent, Calendar of Events and Pro-
gramme; provides campus tours and other services for Universi-

ty guests; prepares displays and exhibits; provides copy and photos for a number of publications; assists groups working Uni-

versity speakers; and serves as the executive office for the Uni-

versity's Public Information Office.

News Service supplies University news and information to mass media, gaters and prepares informative material for spe-
cial and general interest periodicals, helps prepare special Uni-

versity 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.

Three News Service staff members work exclusively with the various University learch science departments and agencies to aid public understanding of University activities in medicine and allied fields; the Sport Information Service responds to media needs for information about the University’s intercollegiate athletic programs; and a Public Information representative is located in the Iowa Center for the Arts, to enhance community and media relations for the Center.

University News Service also conducts a public information internship program to provide working experience for graduate students preparing for careers in specialized writing or in public relations in higher education. Other students work or observe in the various DPI offices from time to time, in cooperation with the School of Journalism’s practicum program.

Reading Clinic
The Children’s Reading Clinic at The University of Iowa exists for the purpose of training classroom teachers, supervisors and consultants, school psychologists and counselors to assess the reading abilities of school-age children, and to recommend instructional materials that are suited to their needs and interests.

The Clinic teaching program is located in an Iowa City elementary school during the academic year. Here the staff provides reading instruction for all the third through sixth graders. During the summer the Clinic is in Wendell Johnson Speech and Hearing Clinic where the staff provides reading instruction for children who attend the Summer Residential Program for therapy in speech, hearing and reading. All the teaching that is under the auspices of the Children’s Reading Clinic is done by student clinicians under the close supervision of Clinic staff members.

The University of Iowa 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 Magazine, a bimonthly magazine for Association members.

The University of Iowa Foundation
The University of Iowa Foundation was organized to help the University obtain the greatest possible educational benefit from private giving. It raises funds for this objective through these major programs: annual giving, capital campaigns and planned or deferred giving.

Organized in 1956, the Foundation is 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 it is a private, nonprofit corporation, its investment policies are less restrictive than the public policies which govern the University itself. The Foundation is currently at work to provide more funds for scholarships, fellowships, student loans, library acquisitions and faculty research grants.

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, nonteaching and nonteaching 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 recordkeeping and collecting personal record data for both faculty and staff employees.
Research Activities

The University recognizes that creative activity is an indispensable function of 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. Imagination, originality, whether in the fine arts or in the sciences, is of a certain 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 ensures continuing studies of the nature, extent, requirements and results of the University's research effort. This office has an interconnecting relationship with the Graduate College, because of the all-University character of the College and the close connection between the graduate programs and research and creative activity.

The University Research Council assists the Vice-President for Educational Development and Research in a regular advisory capacity. The Council consists of nine senior faculty members with widely recognized personal involvements in basic research or creative activity and two student members. Faculty members include two each from the physical, biological and social sciences and the humanities, and one from the faculty at large. The Council gives regular consideration to such matters as the establishment of general policies with respect to the University's research and creative efforts, the review of policies and procedures concerned with securing and allocating funds for support of research and creative activity, and additional matters referred to the general research and creative functions of the University and the health of basic scholarship on the campus.

Programs

With the advice of the University Research Council and other appropriately involved officers and committees of the University, the Office of the Vice-President for Educational Development and Research currently supports the following programs:

Faculty Research Assignments

Under the rules of the State Board of Regents, a faculty member may be assigned to devote full time to a specific research or creative project for a semester. Appointments may be for either the first or second semester.

Old Gold Summer Faculty Research Fellowships

These fellowships provide an opportunity for faculty members to devote full time to research or creative work during the summer months. The program is designed to give support to work that will result in additional 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.

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:

Center for Environmental Studies

Established by the Regents in 1973, the Center for Environmental Studies is developing a program offering options to student majors, undergraduate and graduate, and serving non-majors and off-campus residents exposed needs for service or supplementary environmental education experiences. The goals and objectives of the program are divided into three main areas.

The first area, the planned academic program, includes an undergraduate program emphasizing overall perspectives, basic principles and methodological skills applicable to problems of the environment. The core of the program places special emphasis on technical knowledge of the basic elements of physical and biological sciences; understanding of social structures and institutions; awareness of the political and decision-making environments in which problems are recognized and solved; and basic research skills appropriate to the task of assessing environmental problems and evaluating alternative solutions.

The second area involves interdisciplinary environmental research ensuring the distribution of results throughout the University and to appropriate public agencies.

The third area involves services such as the development of conferences and institutes related to environmental problems of the area, cooperation with government and other environmental agencies, and the provision of assistance in seeking support for formal training programs focusing on control of specific environmental problems, and the provision of an informational function with respect to environmental problems for qualified public users.

Computer Center

University Computer Center provides large-scale, general-purpose computing facilities to all faculty members and students of the University for instruction and research purposes. The Center has a system capable of an extremely wide variety of applications. The computer is used in remote batch processing in connection with a regional computer activity partially funded by
the National Science Foundation, involving several colleges in Iowa and Illinois. Conversational programming by way of type writer terminals is also available. Although the Center is an entity distinct 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.

Institute of Child Behavior and Development
The Institute advises students on programs of study and assists in the coordination of curricula in areas related to child; advises faculty of which their colleagues are interested in the performance of sponsored projects in this area. The Institute keeps abreast of federal, state and foundation policies of support, and acts itself in a "lead agency" role in the development of projects bridging the relevant disciplines.

Research Services and Administration
This office maintains a resource center 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. After a potential funding agency is located, staff is available to assist in the preparation of budget and cover material and to give editorial assistance to achieve effective organization and technical correctness in 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.

Scanning Electron Microscope Laboratory
The Laboratory was established in September, 1971, to provide facilities and technical assistance to research programs involving the use of a scanning electron microscope. Located in the Zoology Building, the Laboratory is equipped with a Cambridge Stereoscan 54 having a resolution of 150 angstroms and a useful magnification range of 20 to 50,000 diameters. In 1974, the scanning electron microscope was modified to improve performance, by the addition of a lehmann hermetic gun/pump system. The microscope is also capable of being interfaced with an energy dispersive x-ray spectrometer system for elemental analysis. There is 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.

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."

Research Activities

Center for Communication Study
See "Journalism" 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."

Center for World Order Studies
See "College of Law."

Child Development Clinic
The Child Development Clinic is an out-patient facility and is a division of the Department of Pediatrics in the University Hospitals. The primary role of the Clinic is as a diagnostic clinic for developmental problems in children. The Clinic will provide a comprehensive study 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 important in medical practice, and to permit studies of normal human physiology, biochemistry and pharmacology. The Center is supported completely by the Division of Research Resources of the National Institutes of Health, on a semi-permanent basis, by five-year 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 legislators 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.

Institute of Agricultural Medicine
The Institute of Agricultural Medicine, housed in the Agricultural Medicine Research Facility on the Oxide Campus, is a part of the Department of Preventive Medicine and Environmental Health, College of Medicine. Research, teaching and extension activities are centered on the safety and health problems of those who live in rural Iowa by occupation or choice. The Iowa Community Pesticide Study and the Accident Prevention Laboratory are portions of the Institute.

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 role and responsibilities, assist governments in their personnel development activities, and help public officials and citizens in their ef-
Institute of Urban and Regional Research

Primary objectives of the Institute are to broaden knowledge in the area of urban and regional studies, to enrich the teaching programs in participating departments and to initiate and carry out interdisciplinary research projects. Through the acquisition of grants and contracts and other in-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.

Two interdisciplinary graduate programs have been established within the Institute. (See "Urban Transportation" and "Urban Growth in Developing Countries.")

Iowa Center for Research in School Administration

See "College of Education."

Iowa Lakeside Laboratory

See "Extension and University Services."

Iowa Urban Community Research Center

The Iowa Urban Community Research Center was established in 1978 as a permanent interdisciplinary research and training agency. Its research has been disseminated in scholarly journals and in a reprint series and a 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.

Laboratory for Political Research

The Laboratory for Political Research is a research and training facility for the Department of Political Science. It provides technical assistance to faculty members engaged in research. This assistance includes both the data collection and analysis stages 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.

Neuroanatomy Center

The Neuroanatomy Center is supported by the National Institutes of Health under a program-project grant. The Center sponsors research projects of importance to the fields of ophthalmology and neurology 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 cutaneous and visceral sensation secondary to disorders of the nervous system. Projects which provide histological and chemical correlates of disorders of the nervous system are also sponsored.

Radiation Research Laboratory (Radiation Biology)

Effects of ionizing 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, radiology, health physics, radiologic physics, cancer research, etc. The Laboratory's introductory course deals with radiation physics, radiographic effects and uses of radioscopes. It is open to advanced undergraduate students who may plan to enter medicine, nuclear research technology or similar programs.

Toxicology Center

The Iowa Center for Toxicology and Biochemical Pharmacology is an integral part of the Department of Pharmacology and is devoted to research in biochemical toxicology and 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 teratogenic and toxic effects and their mechanism of action at the molecular level. Doctoral degrees in pharmacology are offered.

Social Science Data Archive

The Social Science Data Archive is a library of empirical data that can be re-employed by both faculty and students in their research and teaching. Approximately 450 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. Individuals wishing assistance in utilizing the data of the Archive or the computer programs supported by the Archive can call on the personnel of the Laboratory in the Department of Political Science.

Transportation Safety Research Center

The Transportation Safety Research Center was organized to provide a focal point for research in transportation safety. Its primary mission is to stimulate and conduct research through utilization of resources. (Also see "Extension and University Services."
)
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 administration procedures, including the American College Test, and submit a parent's financial statement through ACT Financial Aid Services, Box 1000, Iowa City, Iowa 52240, or College Scholarship Service, Box 881, Evanston, Illinois 60204. When you receive 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 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.

Basic Educational Opportunity Grants
The maximum BEOG is $1,400 minus the amount of computed family contribution. Application forms can be obtained from high school counselors, colleges and public offices.

Supplemental Educational Opportunity Grants
Available to a limited number of undergraduate students unable to attend college or university without such assistance. SEOG grants range from $200 to $1,500 a year but cannot exceed one-half of the recipient's total assistance. There are no specific academic requirements for a SEOG grant, but the applicant must show academic or creative promise.

National Direct Loan Fund
This is the University's largest source for long-term education loans. Undergraduate students may borrow up to $1,000 per year and $3,000 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. Freshmen 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 completes his course of study.

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, dentistry, osteopathy, optometry, podiatry, veterinary medicine or a degree in pharmacy and/or nursing, and is in need of such financial assistance to pursue the course of study. Repayment of the loan portion is arranged with the school at the time of graduation or at the time the student ceases to be a full-time student.

Law Enforcement Education Program
This program consists of federal-funded loans and grants. Loans can be up to $1,800 per year, and grants can be for a maximum of $300 per semester 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 intended 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
Students participating in this program may borrow a maximum of $2,000 per year. Money may be borrowed from commercial banks, credit unions, savings and loan associations and other eligible lending institutions. Repayment begins when the student ceases to be at least a half-time student.

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 numerous opportunities are in University food service and hospitals. Hours range from 10 to 30 a week; the University recommends a maximum of 20.
Scholarships, Fellowships, Assistantships

Unless special conditions are noted, the sources listed below and in the "Loan Funds" section are open to all students in the area for which they are listed.

All-University

Alona Foundation Scholarships; Primrose in mathematics, physical science or engineering, $500.

Activity Scholarships: Students with at least an above-average academic record who have been outstanding participants in extracurricular activities requiring special aptitude, such as forensics or music.

Linda V. Adler Scholarship; Full tuition to male full-time undergraduate student who is a graduate of James Madison High School.

President Scholarships: Presidents, students, permanent Iowa Bennett, Iowa.

Mel M. Brandon Scholarship; Graduate of Cedar Rapids public schools.

Curt Scholarships: Students in the college of Liberal Arts and Business Administration, engineering, nursing, pharmacy; primarily for seniors and juniors.

Career Scholarships: University of Iowa residents from West Liberty, Iowa, are eligible.

Hunt Convaior Scholarship; Iowa City high school senior, first-year tuition plus $100.

Drew Memorial Scholarships; Harry Maylor Memorial Scholarships; Main students.

Georges M. Foundation Scholarships; Dated Scholarships; Full tuition to Iowa high school graduates.

Scott G asses (Menominee) Scholarship; Students from Menominee, Iowa, graduates of high school, $500.

Visiting students with courses of study qualifying for admission to the University of Iowa, administered by the Board of Education, Independent School Fund.

William H. Boll Memorial Scholarships.

Virgil L. Trader Scholarship; Student.

International Scholarships: Foreign students: tuition and fees.

Harold W. Jorg., Sr. Scholarship; Educational Opportunity Program participants.

Alumni A. Fawcett Scholarship; History, engineering, mathematics, education student.

National Merit Scholarship: Graduating high school seniors whose parents are full-time employees of the Missouri Company; less than one half given; apply to the Missouri Company Foundation, St. Louis, Missouri.

Mary S. Miller Memorial Scholarship; art major, preferably from Pennsylvania.

Navy Scholarship; Basic fees in exchange of Basic Administration, Engineering, Ich; Liberal Arts, Nursing, Pharmacy for United States citizens who are World War II or Navy veterans or their direct descendants.

Pat Child Scholarships; Honors students.

President plank (Iowa Scholarship; Sophomore or junior child or grandchild of an Iowa State University employee.

Public Housing Scholarships: Higher rating families, six dependents two children, $300; four students, $100; top select students; $500.

Dr. Ernest W. Schiltz Scholarship; Awarded annually to a student at the beginning of his/her career, $100.

Hannah Scholarship.

President Scholarships: Minority students in need of financial assistance.

President Scholarship; Awarded each year to two high school seniors with superior, junior or senior standing.

University of Iowa Scholarship.

Athletic

Niki Konidiotis Memorial Scholarship Award: To junior student who excelled the Outreach of Wally Konidiotis, for senior year at Iowa.

Tony Zemba Award: Given annually to a student who has distinguished himself in athletics.

Boddy O’Connor Memorial Scholarship Award: Indians of non-urban basketball or gridiron who excel in scholarship, character and athletic ability.

New J. Fowler Memorial Scholarship Fund; four students whose immediate right sibling eligibility has expired, but who have lived on campus.

Business Administration

Alona Foundation Scholarships; Junior or senior is eligible.

Arthur Anderson & Company Accounting Award: Accounting.

Curt Scholarship; Full "All-Scholarship." Engineering.

“Strive & Grow" (800) 787-7878.

FIS Services Scholarships: Junior and senior majoring in major with farm or farm community background, in top 25 percent of class, $600.

Health & Safety Award: Student among top five accounting students, $500.

Home Federal Savings and Loan Association of Des Moines, Scholarships, research grants to further education at finance, insurance, real estate.

Iowa Foundation for Insurance Scholarship: Scholarships: $750 each to four junior, senior or graduate students in insurance.

Life Investors Scholarship; Iowa insurance administration; $300.

Mayfield Foundation in Banking Administration: $300 each to one senior in banking, one in marketing.

Mary Scholarship; $500.

J.B. McAlister Accounting Award.

Charles A. Phillips Scholarship; Business administration major in upper 10 percent of class, no sex $250.

Price Waterhouse Foundation Award; Accounting.

Bruce M. Redford Scholarship; Iowa high school graduate, $1,000 for senior year.

Schleuder and Company: Accounting.

Wagner Electric Fund Scholarship; Business administration major, junior, senior, fees.

Arthur Young & Company Foundation Award; Accounting.

Dentistry

Berk Dental Scholarship; $300.

Joyce H. Stovall Scholarship; Junior or senior, $1,000.

W.B. Perry Company Dental Scholarship; Junior or senior, $2,500.

University Scholarship: junior, preferably in orthodontics.

U of I Dental Achievement Fund Scholarship, Health Professions Foundation.

Dental Hygiene

Orr W. Tishman Scholarship; $250.

Helen M. Wendt Scholarship; 3:18.

Engineering

Alona Foundation Scholarships; Carl Scholarship, Iowa Engineering Society.

Blackwell Foundation Scholarship.

Engineering Honor Society; Scholarship.

Ceramics Scholarship.

Fousands Educational Foundation Trustee Scholarship; Students in courses miss the last $2,500.

Method Student, Cooperative Scholarship.

Pat Child Sponsorship; Engineering.

Pat Child Scholarship.

Molecular Biology and Manufacturing Company Scholarships.

Monkeys Scholarship; Chemical and mechanical Engineering.

Harvey Scholarship.

Orla Scholarship; $150.

Pat Child Scholarship; $100.

Western Electric Foundation Scholarship in Engineering: Technical, fees, books.

Graduate

Approximately one-half of the University’s graduate students receive some form of University-authorized 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 $3,350 and $7,750 for half-time assistants; assistants are also eligible for tuition scholarships; departmental assistantships (one-quarter time or more) of tuition and fees are reduced to resident rates.

University Teaching-Research Fellowships: For first-year graduate students entering doctoral programs; typical stipends of $4,400 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.

EDPA 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 $350 annually for each qualified dependent.

The provisions above are subject to change. University and National Defense Education Act loans are available through the University's Office of Student Financial Aid.

Many departments offer additional support through traineeships, part-time employment in research or part-time teaching appointments. The Office of the Vice-President for Education Development and Research maintains a library of information on private and public 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 public and private corporations and philanthropic organizations annually provide graduate fellowships in certain departments of the University. Information may be obtained from the departments. The University also participates in the fellowship programs of the National Science Foundation and National Institutes of Health, and in the Education Professions Development Act. Information may be obtained from the Graduate College or departmental offices.

Law

- Council Scholarships.
- Aramco Commonwealth Financial Aid Plan.
- St. C. Corey Memorial Scholarship Preference to Iowa residents.
- O’Brien Scholarship.
- Harold J. Cohlhaar Scholarship and Loan.
- Graduates Scholarship.
- Clary L. Hamilton Scholarship Outstanding second-year, expanding first-year study.
- Haskell Scholarship.
- Iowa Law School Foundation Scholarship.
- Laffey Scholarships.
- Nancy Spears Scholarship.

Nursing

- Army Nurse Corps Student Nurse Program: Tuition, books, fees, board and room allowance, medical service, uniforms, uniforms, and uniforms, commissary, laundry, uniforms, 14 meals per day, six months' before graduation, seven two- or three-year units.

Le Lis and Walter L. Hewitt Fund

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The Robert S. and Helen Clovis Memorial Scholarship.

- Sokoloff Scholarship.
- Ralph S. and Helen Clovis Memorial Scholarship.
- Le Lis and Walter L. Hewitt Fund

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The Robert S. and Helen Clovis Memorial Scholarship.
Scholarships and Loans

Medicine

Boyd Loan Fund.

Byers Memorial Loan Fund.

Carr Memorial Loan Fund.

Gunnar R. Olsson Memorial Loan Fund.

Grace Goodhue Robinson Medical Loan Fund: Sophomore through senior.

Health Professions Student Loan (HPSL): Based on need.

Robert Wood Johnson Repatriation Loan Fund: Wives of students from near goodwill areas, based on need.

Kellstadt Loan Fund for Medical Students.

Long Beach Medical School Loan Fund.

Phi Rho Psi Fraternity Loan Fund.

Phi Rho Psi Honors Medical Loan Fund.

Society of Medical Students of Medical School of the University of Southern California: Senior, based on need.

Sigma Xi Foundation Loan Fund: Graduate medical students with special talent.

Sigma Xi Foundation Loan Fund: Senior, based on need.

Richard Todd Memorial Loan Fund.

Nursing

Defining Student Loan Program: Full-time or part-time nursing students. Federal funds available to all students, regardless of location. Non-profit projects can have one-year or maximum ten-year periods. Interest rate for first year, 5 percent. For-profit projects can have one-year or ten-year periods. Interest rate for first year, 4 percent. All projects can have one-year or ten-year periods. Interest rate for first year, 3 percent.

Kellstadt Loan Fund for Nursing Students.

U of S Nursing Student Loan Fund: Senior, $200.

S. Lewis Theriault Loan Fund.

United States Public Health Service Nursing Student Loan Program: Amount of loan to be $500 to $2,000 per academic year, depending on financial need.

Reserve Officers Training Corps

Alumni and friends of the University have provided a number of awards, prizes, and honors in recognition of students' special achievements. Detailed information on criteria and procedures for the selection of recipients may be obtained from the administrative office. Generally, recognition is in the form of certificates, plaques, medals, desk sets or similar items; cash awards of $50 or more are indicated in the following lists.

General

Alpha Chi Sigma Award: Male with highest scholarship standing for two consecutive semesters in chemistry, chemical engineering or biochemistry, Biophysics Award: $200; senior for efforts in biophysics while maintaining satisfactory scholastic standing.

Senior Service Award: $25, 85% average of final year.

Briggs Award: Senior with highest scholastic average among students elected to Phi Eta Sigma in freshman year.

Browning Award: Outstanding potential in radio broadcasting at University-sponsored station.

Tower Award: $100 active member of Tower Board.

Thorpe Award: $50 graduate level; junior women most having, exemplifying qualities and contributions of Mrs. Virgil K. Stader to the University community.

Huntsman Award: Senior; academic excellence, critical intelligence, character, trend and preparation in courses for optimum potential.

Dan G. Miller Award: $300; leadership, history and devotion in University, Pennsylvania Alumni: $50; junior; leadership, athletic achievement, participation in student activities.

Athletic

Athletic Scholarship Council: Graduating senior with highest scholastic average in each inter- varsity sport; highest scholastic scholarship.

Athletic Scholarship Committee: Nominees' names are from inter-varsity, sport; highest scholastic average freshman year and equally applied senior year; highest scholastic average senior year and equally applied senior year; Highest GPA in Football, Basketball, Swimming, Tennis, Track and Field.

I-Certificate: Graduating senior students who have earned one or more inter-varsity sport.

Western Intercollegiate Conference Athletic Achievement Medal: Graduating senior with highest average with distinction in scholarship and athletics.

Forensics

Dentistry

American Association of Dental Hygienists: Lifetime achievement by graduate professional or academic deans in dentistry.

American Academy of Oral Hygiene: Senior with highest scholastic average.


American Academy of Periodontology: Senior; highest interest and commit- ment to oral biology, exemplifying AAD ideals.

American Association of Orthodontists: Senior; outstanding achievement in dental education.

American Dental Society of Anesthesiologists: Senior; outstanding ability or interest in past year.

American Society of Anesthesia: Senior; outstanding achievement in dentistry.

Dental Drug Company Award: Junior; scientific achievement.

Mary Collins Berry Award: Outstanding junior in Clinical medical student's dental.

Dental Class of 1923 Award: Junior; scholarship; professional attitude, character, determination.

Dental Class of 1923 Award: Senior; highest scholastic standing highest year.

Dentistry Intercollegiate Awards Outstanding senior in professional endeavors, Ralph A. Penker Memorial Award: Junior who has excelled scholarship in both science.

William G. Gottfried Memorial Award: Student with highest academic studies in professional.

Dental Research Award: Outstanding achievement in oral surgery research.

International College of Dentistry of Dentistry Award: Senior who has shown the most professi- onal growth and development.

Iowa Society of Oral Surgeons Award: Most promising senior in oral surgery.

Lunden Foundation Award: Senior, for excellence in periodontics.

Miller Awards: Outstanding professor and alumni.

Frank L. Woodbury Memorial Award: Senior, for excellence in periodontics.

Most Valued Award: Student for highest academic standing.

John M. Newell Achievement Award: Dental hygiene senior, on basis of scholastic achieve- ments, and leadership; scholarship or dental hygiene, professional attitude.

Outstanding Dentistry Graduate Society: Senior, for dental hygiene student, on basis of scholarship, character and professional potential.

Sigma Phi Omega Award: Outstanding senior with highest scholastic average and highest grades in dental hygiene studies, based on scholarship, character and professional potential.

Sigma Sigma Omicron Award: Senior, on the basis of scholarship, ability and finan- cial need, preference to student student in undergraduate.

Dental Hygiene

Sigma Phi Omega: National dental hygiene honor society elected to membership upon senior standing in dental hygiene program with highest scholastic and professional qualifications.

Sigma Phi, national chapter: Senior standing in dental hygiene program with highest scholastic and professional qualifications.

Sigma Phi Omega: Lifetime membership in American Dental Hygienists' Association, to dental hygiene senior with highest scholastic and professional qualifications; leadership and community participation, sponsored by Iowa Dental Hygiene Association.

Education

Marvin E. Davis Award: Outstanding student in vocational education or higher education, particularly a student interested in teaching in education.

Marvin E. Davis Award: Outstanding students in professional education or higher education, particularly a student interested in teaching in education.

Nations Bank of America Award: Scholarly candidate for advanced degree in education in agriculture.
Administrative Officers

State Board of Regents

The University of Iowa, Iowa State University of Science and Technology, the University of Northern Iowa, the Iowa State University College of Education and the Iowa State University College of Dental Medicine, all of which are governed by the State Board of Regents, consisting of seven members. The Board membership is as follows:

President: Mrs. H. Rand Pearson, Houston
Vice-President: Dr. T. W. Bailey, Cedar
Executive Secretary: Dr. M. E. Davis, Des Moines

Central Administration

President: Willard L. Ross, B.S., LL.B., LL.M., S.J.D.
Vice-President for University Administration: George A. Chamberlain, B.A., M.A., Ph.D.
Vice-President for Academic Affairs and Dean of the Faculties: May B. French, B.A., M.A., Ph.D.
Vice-President for Academic Affairs and Dean of the Faculties: William B. Bishop, B.S., B.S.E.E.
Vice-President for Business and Finance: Elsie T. Jett, B.A.C.
Vice-President for Educational Development and Research, Dean of the Graduate College: Dana C. Spremucker, B.A., M.A., Ph.D.
Vice-President and Dean for Health Affairs: Robert C. Hinke, B.S., M.D.
Vice-President for Student Services and Dean of Academic Affairs: Philip C. Hallea, B.S., M.S., B.S., M.D.

Colleges

Business Administration
Dean: B. L. Barrett, B.S., M.B.A., Ph.D.
Center for Labor and Management
Director: Fred F. West, B.A., M.B.A., Ph.D.

Dentistry
Dean: James H. Clark, B.S., B.S., D.D.S., M.D.

Education
Dean: Howard R. Jones, B.S., B.A., M.D., Ph.D.

Engineering
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Institute of Hydraulic Research
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Graduate
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Institute of Advanced Studies: Frank E. Rolow, B.S., M.S., Ph.D.

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School of Art and Art History
Dean: Richard L. T. Shemansky, B.A., M.A., Ph.D.
School of Journalism
Dean: Gordon L. Sadler, B.A., M.A., Ph.D.
School of Letters
Dean: John C. Grote, B.A., M.A., Ph.D.

School of Library Science
Director: Frederick W. S. W. B.S., M.A., M.L.

School of Music
Director: Helen Vuolteenaho, B.S., M.A.

School of Physical Education
Director: James C. Fuldinger, B.A., M.D., Ph.D.

School of Social Work
Director: Thomas H. Walz, B.A., M.S.W., Ph.D.

Law
Dean: Lawrence E. Rader, B.S., J.D.

Medicine
Dean: John W. Stuckelberg, B.S., M.D.

Nursing
Dean: Evelyn Barlow, B.A., M.A., Ph.D.

Pharmacy
Dean: Dale E. Voorhees, B.S., Ph.D.

Other Educational Units
Division of Extensive and University Services
Dean: Robert F. Ray, B.A., M.A., Ph.D.

Astronautical Center
Director: William H. B. S. W. B.S., M.S., Ph.D.

Bureau of Educational Research
Director: L. Leonard Denton, B.A., M.A., Ph.D.

Bureau of Police Science
Director: Richard H. Nettleton, B.S., Ph.D.

Center for Conference and Institutes
Director: Jack W. Hogsett, B.A., M.S.

Center for Instructional Services
Director: L. Leonard Denton, B.A., M.A., Ph.D.

Institute of Public Affairs
Director: Charles M. Backstrom, B.A., M.A., Ph.D.

Institute of Urban Studies
Director: Richard V. Cole, B.S., Ph.D.

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Director: John E. Stolzberg, B.A.

Radio Station WHO
Director: Hugh V. Coulter, B.A., M.A., Ph.D.

Computer Center
Director: Gerald W. Way, B.A., M.S., Ph.D.

Institute of Child Behavior
Director: Paul L. Rosen, B.A., M.S., Ph.D.

Library
Dean of Library Administration: Leslie W. Deming, B.A., M.A., B.S.I.E., Ph.D.

Summer Session
Dean: B. L. Barrett, B.S., M.B.A., Ph.D.

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Vice-President and Dean for Health Affairs: Robert C. Hinke, B.S., M.D.
University Hospitals and Clinics

Director and Assistant Vice-President for Health Affairs: John W. Collins, B.A., M.D.

Psychiatric Hospital

Director: George Winkler, A.B., M.D.

State Bacteriological Laboratory

Director: William J. Haurer, B.A., M.A., Ph.D.

Oakdale Hospital

Director: John C. MacQueen, B.S., M.D.

University Hospital School

Director: Raymond A. Rembolt, B.A., M.D.

Student Health

Acting Director: Harvey G. Fischel, B.S., M.D.

State Services for Crippled Children

Director: John C. MacQueen, B.S., M.D.

Research Administration

Vice-President for Educational Development and Research: Duane C. Sprinzen-
heude, B.S., M.A., Ph.D.

Assistant Vice-President for Educational Development and Research: John D.
McGraw, B.S., Ph.D.

Office of Research Services and Administration

Director: Margery S. Heppe, B.A., M.A.

Office of Project Development

Director: John D. McWade, B.A., M.A., Ph.D.

Office of International Education and Services

Director: Stephen M. Arum, B.A., M.A.T.

Student Services

Vice-President: Philip C. Hubbard, B.S.S.E., M.S., Ph.D.

Admissions and Records

Dean: W. Albert Cox, B.S.S.E., M.A.

Director of Admissions: Robert D. Lady, B.S., M.A.

Registrar: John P. Deerr, B.A., M.A.

Cultural Affairs, Performing Arts and Athletics

Coordinator: James H. Wedekind, B.A.

Hancher Auditorium

Director: James H. Wedekind, B.A.

Museum of Art

Director: Ulric S. Wilks, M.A.

Iowa Memorial Union

Manager: James M. Bates, B.B.A.

Dean of Students

Dean: Marine L. Hall, B.A., M.A.

Student Development Center

Director: Peter O. Weltz, B.S., M.S., Ph.D.

Career Planning and Placement

Director: Corrine Haliburn, B.A., M.A.

University Counseling Service

Director: Robert Subramanian, B.A., M.S., Ph.D.

Student Financial Aids

Director: John E. Moore, B.A., M.A.

University Examination and Evaluation Service

Director: Douglas R. Whitney, B.S., M.A., Ph.D.

Business and Finance

Vice-President: Erwin T. Rollins, B.S.C.

Business Office

Controller and Secretary: Leonard R. Herre, B.S.C.

Director of Purchasing: Alwin Barlow, B.S.

Business Manager and Treasurer: Ray B. Meslemay, B.S.C.

University Personnel Service

Director: Paul R. Dobrov, B.A.

Dormitories and Dining Services

Director: Theodore M. Rohrer, B.S.C.

University Architect

George L. Harter, B.S., B.A.

Physical Plant

Director: Duane A. Neubert, B.S.E.E.

General University

Alumni Association

Executive Director: Joseph W. Meyer, B.A., M.A.

Facilities Planning and Utilization

Director: Richard E. Gibson, B.S.C.

Public Information and University Relations

Director: Gordon B. Steyer, B.A., M.A.

Intercollegiate Athletics

Director: Charles W. Elliott, A.B.

University of Iowa Foundation

Executive Director: Darrell D. Wyrick, B.S.C.H.E., M.S.
Residence
Section 1.4(262). Classification of Residents and Nonresidents for Admission and Fee Purposes

1. General—Students enrolling as one of the three nonresident classes shall be classified as resident or nonresident for admission, fee and tuition purposes by the registrar. The decision shall be based upon information furnished by the student and all relevant information. The registrar is authorized to request such written documentation, effects, verifications or other evidence as are deemed necessary to establish the domicile of a student, including proof of tenancy, assumption, adoption, award of custody or appointment of a guardian. The basis of determining that a student is eligible to pay the nonresident fee is it is the student's primary residence.

For purposes of "nonresident classifications, the word "nonresident" as herein used shall follow legal guardians or others seeking to be parents in all cases where lawful custody of any applicant for admission has been awarded to other person other than actual parent.

2. Residence for nonresident purposes—Regulatory regarding residence for admission, fee and tuition purposes are generally divided into two categories—those apply to students who are under the age of 18 and those that apply to students who are over 18 years of age. The requirement in these categories are different. Domicile within the state means the domicile of the student at the time of preliminary payment of the nonresident fee and must be proven by presentation within the state. The two categories are discussed in more detail below.

3. Students who are minors—The residence of a minor shall follow that of the parents of the minor, unless the minor has acquired domicile of the minor's own, beyond question, the residence of the minor during the time he is, after his fourteenth birthday, the minor's domicile in the state in which he resides. It is the residence of the minor's parent(s) with whom the minor resides or to whom he has been assigned by court order. The parents of a minor applying for admission will be considered residents of Iowa if the minor has been residing within the state for at least the beginning of the current semester in the state at the time of the beginning of the current semester, quarter or session in which the minor is first enrolled at the University of Iowa or other public institution of higher education in Iowa. The residence of the minor whose parent(s) have resided in Iowa less than three years prior to the student's entrance to the University of Iowa will not be considered a resident of the state for purposes of nonresident residency classification.

A minor under legal guardianship shall not be considered resident in the state prior to the minor's majority. For purposes of this classification of chapter is applicable to minor residence.

A minor living with and being supported by a relative or a friend who is a resident of the state shall be considered resident in the state. A minor who resides with and is supported by a relative or a friend who is not a resident of the state shall be considered a nonresident of the state for purposes of nonresident eligibility.

4. Students who are 18 years of age or over and nonstudents under 18 years of age— Students 18 years of age or over and nonstudents under 18 years of age shall be classified as residents if they reside within the state for at least one semester in the state at the time of the beginning of the current semester, quarter or session in which the minor is first enrolled at the University of Iowa or other public institution of higher education in Iowa. The residence of the minor whose parent(s) have resided in Iowa less than three years prior to the student's entrance to the University of Iowa will not be considered a resident of the state for purposes of nonresident residency classification.

A minor residing in Iowa who is 18 years of age or over and nonstudent residing in Iowa who is 18 years of age or over shall be classified as nonresident of the state unless the minor is a student residing in Iowa who is attending a college or university located in Iowa or a student residing in Iowa who is attending a college or university located in Iowa and who is a student of the University of Iowa or other public institution of higher education in Iowa. The residence of the minor whose parent(s) have resided in Iowa less than three years prior to the student's entrance to the University of Iowa will not be considered a resident of the state for purposes of nonresident residency classification.

5. General—Students residing in Iowa may be classified as nonresidents for purposes of nonresident classification of the student's primary residence as being nonresident in the state and shall be subject to various discriminatory admission and should also pay the nonresident fee for such fee other than that child for resident tuition.

A minor residing in Iowa who has been classified as a nonresident for purposes of nonresident classification and seeks to be classified as a resident for purposes of nonresident classification shall be classified as nonresident for purposes of nonresident classification and shall be subject to various discriminatory admission and should also pay the nonresident fee for such fee other than that child for resident tuition.

A minor applying for admission will be considered residents of Iowa if the minor has been residing within the state for at least the beginning of the current semester in the state at the time of the beginning of the current semester, quarter or session in which the minor is first enrolled at the University of Iowa or other public institution of higher education in Iowa. The residence of the minor whose parent(s) have resided in Iowa less than three years prior to the student's entrance to the University of Iowa will not be considered a resident of the state for purposes of nonresident residency classification.

A minor living with and being supported by a relative or a friend who is a resident of the state shall be considered resident in the state. A minor who resides with and is supported by a relative or a friend who is not a resident of the state shall be considered a nonresident of the state for purposes of nonresident eligibility.

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A minor under legal guardianship shall not be considered resident in the state prior to the minor's majority. For purposes of this classification of chapter is applicable to minor residence.
new students in all grades of an Iowa high school. The option for admission by examination or equivalency exam may be open to these students. Each cohort will be organized for the student to attend a designated program, and students will be admitted on a first-come, first-served basis, as eligibility criteria are met.

3. A student of a nonpublic high school must submit all data as required above, and, in addition, must take examinations which will determine his general competencies to be successful college work.

4. A student in a nonpublic high school must submit all data required above, and must take examinations which demonstrate general competencies to his college work. The student must be officially transferred to a public school in order to be admitted to the University of Iowa. The student must be officially transferred to a public school in order to be admitted to the University of Iowa.

5. A student who has not attended a high school must submit all data required above, and must take examinations which demonstrate general competencies to his college work. The student must be officially transferred to a public school in order to be admitted to the University of Iowa.

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The college work as outlined below will suffice to meet the minimal academic requirements for admission to the College of Medicine. Applicants who have completed the baccalaureate degree and required courses of at least one year prior to applying to the College of Medicine will be considered by the admissions committee only under exceptional conditions.

The college curriculum must include at least three years (equivalent to 90 semester hours), including specific, required science courses as prescribed by the faculty of the College.

Students planning to study medicine should be aware that other college work will be required in addition to preparatory science, because it offers opportunity to develop fundamental scientific roots, a broader background, and special interest in the medical profession. In the selection of applicants, preference will be given to those who evidence gna of having achieved academic distinction in science.

To be considered for admission, applicants must have achieved a grade-point average of at least 2.5 for college work taken on a 4.0 scale.

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