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Catalog of The University of Iowa, 1976-78

University of Iowa

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Catalog of
The University of Iowa

1976-78

Copies of this Catalog are available for examination in all Iowa high schools, offices of the county superintendents of schools, public libraries and justice and community colleges; at the major state government offices in Des Moines; and in each office of the University. Copies may be requested from the Office of Admissions without charge. Reprints of individual sections of the Catalog are also available without charge.

Tuition, fees, residence hall rates, course offerings and personnel are shown as they existed at the time of preparation of the Catalog, and are subject to subsequent change by action of the Iowa Board of Regents, governing body of the University. Current information about costs and course offerings for particular sessions may be requested from the Office of Admissions.

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# University Calendar

## First Semester

<table>
<thead>
<tr>
<th>Event</th>
<th>1976-77</th>
<th>1977-78</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advising and Counseling</td>
<td>August 23</td>
<td>August 22</td>
</tr>
<tr>
<td>Registration begins</td>
<td>August 24</td>
<td>August 23</td>
</tr>
<tr>
<td>Classes begin</td>
<td>August 26</td>
<td>August 25</td>
</tr>
<tr>
<td>Holiday</td>
<td>September 6</td>
<td>September 5</td>
</tr>
<tr>
<td>Thanksgiving recess begins</td>
<td>November 26</td>
<td>November 23</td>
</tr>
<tr>
<td>Holiday</td>
<td>November 25</td>
<td>November 24</td>
</tr>
<tr>
<td>University holiday</td>
<td>November 29</td>
<td>November 28</td>
</tr>
<tr>
<td>Classes resume</td>
<td>December 9</td>
<td>December 9</td>
</tr>
<tr>
<td>First-semester classes end</td>
<td>December 11</td>
<td>December 12</td>
</tr>
<tr>
<td>Examination week begins</td>
<td>December 17</td>
<td>December 16</td>
</tr>
<tr>
<td>Examination week ends</td>
<td>December 23</td>
<td>December 26</td>
</tr>
<tr>
<td>University holiday</td>
<td>December 24</td>
<td>December 27</td>
</tr>
<tr>
<td>Holiday</td>
<td>December 31</td>
<td>January 2</td>
</tr>
<tr>
<td>University Holiday</td>
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<td></td>
</tr>
</tbody>
</table>

## Second Semester

<table>
<thead>
<tr>
<th>Event</th>
<th>1976-77</th>
<th>1977-78</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration begins</td>
<td>January 10</td>
<td>January 12</td>
</tr>
<tr>
<td>Classes begin</td>
<td>January 12</td>
<td>January 16</td>
</tr>
<tr>
<td>Spring vacation begins</td>
<td>March 18</td>
<td>March 17</td>
</tr>
<tr>
<td>Saturday-only classes meet</td>
<td>March 19</td>
<td>March 18</td>
</tr>
<tr>
<td>Classes resume</td>
<td>March 28</td>
<td>March 27</td>
</tr>
<tr>
<td>Second-semester classes end</td>
<td>May 3</td>
<td>May 5</td>
</tr>
<tr>
<td>Examination week begins</td>
<td>May 5</td>
<td>May 8</td>
</tr>
<tr>
<td>Examination week ends</td>
<td>May 13</td>
<td>May 12</td>
</tr>
<tr>
<td>Commencement</td>
<td>May 14</td>
<td>May 13</td>
</tr>
<tr>
<td>Holiday</td>
<td>May 30</td>
<td>May 29</td>
</tr>
</tbody>
</table>

## Summer Session

<table>
<thead>
<tr>
<th>Event</th>
<th>1977</th>
<th>1978</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration</td>
<td>June 6</td>
<td>June 5</td>
</tr>
<tr>
<td>Classes begin</td>
<td>June 7</td>
<td>June 6</td>
</tr>
<tr>
<td>Holiday</td>
<td>July 4</td>
<td>July 4</td>
</tr>
<tr>
<td>Session closes</td>
<td>July 29</td>
<td>July 28</td>
</tr>
<tr>
<td>Opening of Independent Study Unit for law and graduate students</td>
<td>August 1</td>
<td>July 31</td>
</tr>
<tr>
<td>Holiday</td>
<td>September 5</td>
<td>September 4</td>
</tr>
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The University of Iowa received its charter from the first Iowa General Assembly on February 23, 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 ten colleges: Business Administration, Dentistry, Education, Engineering, 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 was 22,500 students in the fall of 1975. 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 82.5 percent (Fall, 1975) 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 ten 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. Over 60 percent of the University’s entering freshmen have B averages or above in high school; approximately 80 percent ranked in the upper half of their high school classes, 25 percent in the upper tenth.

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

The Faculty

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

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

Accreditation and Associations

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

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

Colleges

Business Administration—American Association of Collegiate Schools of Business

Dentistry—American Dental Association

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—Liaison Committee on Medical Education (representing the American Medical Association and the Association of American Medical Colleges)

Nursing—National League for Nursing

Pharmacy—American Council on Pharmaceutical Education

Schools

Library Science—American Library Association

Music—National Association of Schools of Music

Social Work—Council on Social Work Education

Departments

Chemistry—American Chemical Society

Dental Hygiene—American Dental Association, Council on Dental Education

Hospital Administration—Accrediting Commission on Graduate Education for Hospital Administration

Medical Technology—Council on Medical Education of the American Medical Association in collaboration with the American Society of Clinical Pathologists and the American Society for Medical Technology

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 sessions 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.
General Information

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

Human Rights
The University is guided by the precept that in no aspect of its programs shall there be a difference in the treatment of persons because of race, creed, color, national origin, age, sex or any other classifications that deprive the person of consideration as an individual, and that equal opportunity and access to facilities shall be available to all. This principle is expected to be observed in the admission, housing and education of students; in policies governing programs of extracurricular life and activities; and in the employment of faculty and staff personnel. The University 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, 108 Calvin 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 or 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 dates 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—Fall Semester November 15—Spring Semester

College of Dentistry
January 15—Fall Semester only

College of Engineering
Ten days before Registration begins—all sessions

Graduate College
May 1—Summer Session July 15—Fall Semester December 1—Spring Semester

College of Law
April 1—Summer Session March 1—Fall Semester only

College of Medicine
December 1—Fall Semester only

College of Nursing
March 1—Fall Semester June 15—Spring Semester January 15—Summer Session

College of Pharmacy
March 1—Fall Semester only

Dental Hygiene Program
April 1—Fall Semester only

Teacher Education Program
May 15 Preceding the academic year in which student plans to enroll in professional education courses

Foreign Students
Self-financed students located overseas: January 1—Summer Session March 1—Fall Semester August 1—Spring 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—Fall Semester December 1—Spring 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, Calvin Hall, The University of Iowa, Iowa City, IA 52242 U.S.A.)

American College Teste
The University of Iowa requires all entering freshmen and under-graduates as usual to students to complete the American College Teste
General Information

The University of Iowa uses ACT scores for:

Admission—As a criterion for admitting some students uncondi-
tionally or on probation; for requiring some students to attend a
probationary summer session; and for denying admission to ap-
licants who do not meet minimal standards.

Placement—As a basis for excusing some students from certain
basic course requirements; for placing others in sections designed
to meet individual needs; and for advising students concerning
their programs of study and future educational plans.

Scholarship—As a criterion for awarding University-adminis-
tered 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 undergrad-
uate admission at Iowa complete the American College Tests
during the fall prior to his or her anticipated registration.

Applicants who have completed the tests but did not have their
scores reported to the University should request this reporting from
the Records Section, American College Testing Program, Box
451, Iowa City, Iowa 52240. Further information, including
testing dates and location, may be obtained from high school or
college counselors, or from the ACT Program.

Graduate and Professional College Examinations
Prospective Graduate College applicants should take the Graduate
Record Examination (GRE) Aptitude Test or, if applying for
admission to a department of the College of Business Administra-
tion other than Economics, the prospective applicants to the
colleges of Dentistry, Law or Medicine are required to take
admission 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
In the interest of providing optimum health care, Student Health
Service strongly recommends that following their admission in-
coming students submit physical examination reports and personal
health histories on the forms provided for that purpose. This
information does not affect the student’s admission, and is exclus-
vively for the use of Student Health Service as necessary back-
ground 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 academic year:

<table>
<thead>
<tr>
<th>Hours</th>
<th>Undergraduate</th>
<th>Graduate</th>
<th>Density</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>reg. res. nonres.</td>
<td>res. nonres.</td>
<td>res. nonres.</td>
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<tr>
<td>0</td>
<td>$66 $66</td>
<td>$77 $77</td>
<td>$189 $189</td>
</tr>
<tr>
<td>1</td>
<td>66 66</td>
<td>77 77</td>
<td>189 189</td>
</tr>
<tr>
<td>2</td>
<td>66 66</td>
<td>77 77</td>
<td>189 189</td>
</tr>
<tr>
<td>3</td>
<td>95 95</td>
<td>116 116</td>
<td>189 189</td>
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<tr>
<td>4</td>
<td>124 124</td>
<td>155 155</td>
<td>189 189</td>
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<tr>
<td>5</td>
<td>153 327</td>
<td>199 410</td>
<td>320 696</td>
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<tr>
<td>6</td>
<td>182 391</td>
<td>243 500</td>
<td>320 696</td>
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<tr>
<td>7</td>
<td>211 455</td>
<td>287 590</td>
<td>320 696</td>
</tr>
<tr>
<td>8</td>
<td>240 519</td>
<td>313 680</td>
<td>320 696</td>
</tr>
<tr>
<td><strong>9</strong></td>
<td>269 583</td>
<td>390 825</td>
<td>313 1140</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hours</th>
<th>Medicine</th>
<th>Law</th>
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</thead>
<tbody>
<tr>
<td>0-5</td>
<td>$318 $318</td>
<td>$148 $148</td>
</tr>
<tr>
<td>5-9</td>
<td>371 822</td>
<td>245 577</td>
</tr>
<tr>
<td><strong>9</strong></td>
<td>600 1350</td>
<td>390 860</td>
</tr>
</tbody>
</table>

*Nine hours and over
**Twelve hours and over

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 admis-
sion to minor sports events and to student-faculty concerts and
plays; admission to major sports events and to performances by
visiting singers and concert artists, at reduced rates; subscriptions
to the student newspaper, The Daily Iowan, on a housing unit basis;
certain student hospital services; and other activities and services
as announced.

Registration
All persons who attend University classes are required to register
and pay the established tuition and fees. Students in the Graduate
College and the colleges of Engineering, Liberal Arts and Nursing
may audit courses with proper approval. Students who audit
courses will be assessed fees based on the fewest credits 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—sigma housing expenses, and such incidental Uni-
versity expenses as library and parking fines, are payable on an
installment basis, with billing the first of September, October, and
November for the fall semester, and the first of February, March
and April for the spring semester. Students with accounts overdue
on the 15th of the month are reported to the Registrar for
cancellation of registration. There is a $10 fee for reinstatement.
Refund Schedule
Students who cancel their registration during a regular semester receive reduction of fees assessed as follows: during the first week of classes—40%; during the second week—50%; during the third week—50%. There is no reduction of fees for cancellations after the third week of classes.

University Marking System
Mark Definition Grade Points/Semester Hour
A above average 4
B average 3
C average 2
D below average but passing 1
F failing 0
R* audit 0
W* incomplete 0
P* passing 0
H* honors 0
S* satisfactory 0
U* unsatisfactory (Graduate College only) 0
0* no grade submitted 0

("Not used in computing grade-point averages")

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:

Pharmacy
Highest distinction 3.75 GPA highest 2%
High distinction 3.50-3.74 next highest 3%
Distinction 3.25-3.49 next highest 3%

Other Colleges

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

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 "A-11" is the code for the course numbered 11 in the Department of Chemistry (A). It is entitled "Elementary Quantitative Analysis."
Course numbers below 100 designate courses "Primarily for Undergraduates," numbers 100 to 199 designate courses "For Undergraduates and Graduates," and numbers 200 and above designate courses "Primarily for Graduates."

College of Business Administration
6A Accounting
6B Business Administration
6E Economics
6S Business Education

College of Dentistry
81 Fixed Prosthodontics
82 Operative Dentistry and Periodontics
84 Removable Prosthodontics
86 Oral Pathology and Diagnosis
87 Oral Surgery
88 Dental Hygiene
89 Orthodontics
90 Pedodontics
92 Periodontics
111 Preventive and Community Dentistry
112 Dentistry Non-Departmental
114 Comprehensive Care

College of Education
7A Post-Secondary and Continuing Education
7C Counseling and Guidance
7D Educational Administration
7E Early Childhood and Elementary Education
7F Social Foundations and Comparative Education
7H Post-Secondary and Continuing Education
7P Educational Psychology, Measurement and Statistics
7S Secondary Education
7U Special Education
7V Instructional Design and Technology
7X Education Interdisciplinary

College of Engineering
All courses are offered by the Divisions for the academic programs. Division course offerings are distinguished by the first two digits of the course prefix.

Prefix Division
3Ex Energy Engineering
5Ex Information Engineering
6Ex Materials Engineering
6Ex Systems Engineering

The third digit of the course prefix denotes the academic program for which the course is offered.

Third Digit x Program
0 Undergraduate Engineering Core
1 Biomedical Engineering
2 Chemical Engineering
3 Civil Engineering
4 Environmental Engineering
5 Electrical Engineering
6 Industrial and Management Engineering
8 Mechanical Engineering
9 Mechanics and Hydraulics

91 College of Law

College of Liberal Arts
0 Nondepartmental Courses
00L Lakeside Laboratory
1A Basic Studio
1B Elements of Art
1C Ceramics
1D Design
1E Art Education
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>College or Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>1P</td>
<td>Drawing</td>
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<tr>
<td>1G</td>
<td>Metalworking</td>
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<tr>
<td>1H</td>
<td>Art History</td>
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<tr>
<td>1J</td>
<td>Multimedia</td>
<td></td>
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<tr>
<td>1K</td>
<td>Painting</td>
<td></td>
</tr>
<tr>
<td>1L</td>
<td>Photography</td>
<td></td>
</tr>
<tr>
<td>1M</td>
<td>Print Making</td>
<td></td>
</tr>
<tr>
<td>1N</td>
<td>Sculptures</td>
<td></td>
</tr>
<tr>
<td>1P</td>
<td>Cross reference with courses which originated in other departments</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Botany</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Speech Pathology and Audiology</td>
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<tr>
<td>4</td>
<td>Chemistry</td>
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</tr>
<tr>
<td>8</td>
<td>English</td>
<td></td>
</tr>
<tr>
<td>8L</td>
<td>English Language and Linguistics</td>
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<tr>
<td>8P</td>
<td>English Professional</td>
<td></td>
</tr>
<tr>
<td>8W</td>
<td>English Writing</td>
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</tr>
<tr>
<td>9</td>
<td>French</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Basic Skills Courses</td>
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<tr>
<td>11</td>
<td>Core Courses</td>
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<tr>
<td>12</td>
<td>Geology</td>
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<tr>
<td>13</td>
<td>German</td>
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<tr>
<td>14</td>
<td>Greek</td>
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<tr>
<td>16</td>
<td>History</td>
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<td>17</td>
<td>Home Economics</td>
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<td>18</td>
<td>Italian</td>
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<td>19</td>
<td>Journalism</td>
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<tr>
<td>20</td>
<td>Latin</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Library Science</td>
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<td>22C</td>
<td>Computer Science</td>
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<tr>
<td>22M</td>
<td>Mathematics</td>
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<tr>
<td>22S</td>
<td>Statistics</td>
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<td>23</td>
<td>Military Science</td>
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<tr>
<td>23A</td>
<td>Astronautal Military Studies</td>
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<tr>
<td>24</td>
<td>Museum Training</td>
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</tr>
<tr>
<td>25</td>
<td>Music</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Philosophy</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Physical Education for Men</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Physical Education for Women</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Physics and Astronomy</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Political Science</td>
<td></td>
</tr>
<tr>
<td>30A</td>
<td>Public Affairs</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Psychology</td>
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</tr>
<tr>
<td>32</td>
<td>Religion</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>European Literature and Thought</td>
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<td>College of Pharmacy</td>
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Housing

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 exemptions. Exceptional criteria are outlined in the pertinent rule brochure available from the University Housing Office, 330 North Capitol Street, Iowa City, Iowa 52242. Exception requests must be received by the University Housing Office at least 30 days before the session for which the exemption is requested. Exception 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 rent to all students on the basis of their individual merits 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 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, triple and quadruple rooms with full or partial board are available in the Grand Avenue Residence Halls (west campus), which include Hillcrest, Quadrangle, South Quadrangle, Rockwell and Slater halls, and in the Clinton Street Residence Halls (east campus), which include Borge Hall, Carrier Hall, Daum House and Stanley Hall. Students not living in residence halls may contract for full or partial board. Some are lounges, study rooms, borrowing libraries and recreation rooms, 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 governing body and is represented in the government of its residence hall.

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

Upperclass Students
Juniors, seniors and graduate students may request residence hall accommodations in 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 read 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 the amount of $50 to the University Housing Office.

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

Students are encouraged to choose their own roommate. 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 ten days after the University Housing Office receives 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 contracts in accordance with the terms and conditions set forth in the contract.

Rates
Basic rates for University residence hall accommodations for the 1976-77 academic year are $1,304 for a double room and $1,190 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-operated apartments available to married students in the Hawkeye Drive, Hawkeye Court and Parlawon complexes.

Rates for 1976-77 range from $99 to $107 per month for one-bedroom units (there are only 4) at the lower rate to $130.00 for two-bedroom units, not including gas, electricity and tele-
Housing

Phone. All units are unfurnished. Rates are subject to change annually.

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 filed 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 the rights of tenants.

Fraternities

Nineteen undergraduate and six professional fraternities operate chapter houses at Iowa. Houses accommodate 35 to 45 men.

Undergraduate fraternities are Acacia, Alpha Epsilon Pi, 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 14 national sororities active at Iowa are Alpha Chi Omega, Alpha Delta Pi, 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.
Academic Advisory Offices
Each student is assigned a faculty adviser to assist with registration, educational planning and academic counseling. Students planning to complete preprofessional courses are assigned to academic advisers from the areas of their choice. Students in the professional colleges are advised by the college deans or their designated representatives. Graduates are advised by their department heads and the Graduate College Dean. In addition to academic advising, advisers also serve as general consultants to students, and refer those with special problems to the appropriate areas.

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 not currently or too experimental for initiation 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 courses are generally open to anyone who is interested in the course. Courses taken for no credit are free. Regular tuition 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 each semester. A catalog of individuals engaged in a resource and skills exchange is printed once a month. For more information, contact the Action Studies Office, 305 Jefferson Building.

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.

Career Services and Placement Center
Placement
Job placement assistance is provided for all seniors and graduate students seeking employment in business, industry, government, and non-profit agencies. Activities include individual consultations with professional placement advisers, seminars for developing job-hunting/interviewing skills, on-campus interviews with prospective employers, information on employment trends for college graduates, background data on thousands of employers, and data on current job opportunities. (Also see "College of Engineering" and "College of Education" for placement services these Colleges offer.)

Career Planning
Activities include help in developing realistic career plans, locating career alternatives related to major field of study or interests, finding meaningful entry-level employment, developing effective job search skills and tools, and preparing women and minority students for the work world. Assistance provided through individual career advising, workshops, career days, groups and seminars, and two-credit course, "Making a Vocational-Educational Choice."

Career Resource Center
Whether in search of information on career opportunities or how to best prepare to enter the job market, the Career Resource Center offers assistance from its professional advising staff, the computerized vocational information system, and its collection of career pamphlets, job search aids, college catalogs, education directories and employer files and directories.

Cooperative Education
Coordinated by the Career Services and Placement Center, the Cooperative Education Program offers students the opportunity to alternate academic studies with related work experiences. Students who meet the prerequisites of their respective colleges or academic departments generally enter the Program following their sophomore year. Cooperative education positions are filled on a competitive basis with participating employers making the final selections from among the student candidates.

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 dental clinics at the University of Iowa College of Dentistry are primarily for educational purposes. All employees of the University and all students who are registered in 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.

Educational Opportunity Program
This program identifies students from educationally disadvantaged backgrounds and arranges financial and academic assistance according to individual need for those admitted to the University. All inquiries should be sent to the EOP Admissions Coordinator in the Office of Admissions.

Evaluation and Examination Service
Evaluation and Examination Service duplicates, scores and analyzes many course examinations. It helps faculty members de-
velop and improve their classroom tests by providing thorough analyses of the results of examinations. It also helps faculty or student groups with particular project requests, such as teacher or course evaluation and development. Additionally, it conducts institutional research projects and provides consulting services on questionnaire and survey design.

The University, one of the many affiliated programs, including the American College Test (ACT), Medical College Admission Test (MCAT), Graduate Record Examination (GRE), Graduate Management Admissions Test (GMAT), Graduation Foreign Language Test (TOEFL), and College- Level Examination Program (CLEP).

Health Service
The Student Health Service, including the clinic and inpatient service, is located in the Children's Hospital in the University medical complex. All registered students at the University are eligible for out-patient care in the Student Health Clinic, which provides complete primary medical services. Student Inpatient (inpatient) care is provided to students requiring medical supervision and nursing care. There is a daily charge for inpatient nursing care, and there are charges 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 policy, University-approved group plan insurance is available for individual students or as a family plan covering students and dependents.

High School-College Relations
Admissions is 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.

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

Intramural Sports and Recreational Activities
Through the University's Division of Recreational Services, all interested students have opportunities to participate in more than 20 different intramural sports and recreational activities. (See "Recreational Services" in "General Services and Facilities").

Iowa Memorial Union
The Union is the center of University co-curricular activities. It houses the Student Activities Center, University Counseling Service, Career Services and Placement Center, and Campus Information Center. Its facilities include a variety of food services, a bowling and billiards area, a barber shop, a creative crafts center, a bookstore, a sundries shop, a television room, lounges, meeting rooms, auditoria for lectures and concerts, art and sculpture display areas, and, in the adjoining Iowa House, 105 guest rooms for parents, alumni, conference and workshop participants, and other visitors to the campus.

Office of International Education and Services (OIES)
The OIES assists U.S. students who wish to study, travel or work abroad, and counsels foreign students who attend the University. The OIES houses an Overseas Opportunities Center staffed by a professional adviser. The Center has extensive information about hundreds of study abroad programs (including several jointly sponsored by The University of Iowa), foreign universities, travel opportunities, housing, camping, trekking, etc. The OIES serves as the Fulbright Program Adviser for UI students and faculty, and has information about many scholarships and fellowship programs for people with international interests. The International Student ID card can be obtained at the OIES.
The Foreign Student Advisers in the OIES promote and facilitate interaction among Americans and foreign students and professionals. They also provide information, advice and counselling for the over 500 foreign students and professionals in such areas as immigration, personal and social adjustment, and financial planning.
The OIES operates the International Center, which students, faculty and Iowa City community members use for meetings, meals and activities which have an international focus.

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, transfer and graduate—be as many of their how-to and where-to questions as possible. in 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 Rhetoric Program provides individualized instruction for any University student who wishes to improve their college-level reading performances. Students are asked to specify what reading problems they have met; teachers adapt practical materials and methods to help tackle those problems. Students may work on improving study skills, including SQ3R and mapping techniques, locating skills, test-taking abilities, command of vocabulary, comprehension, critical reading and increased rate of reading.
The Reading Lab offers two service courses:
A Voluntary Reading Lab meets 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 is based on credit and assigns no grade; ordinarily no outside assignments are given; work is restricted to the Lab hour, 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 attend regularly, and work on eye-span and skimming exercises; reading files and timed reading exercises, both with comprehension tests; paced 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.
The Lab also offers two for-credit courses, 10-18 Rhetoric, for students who need exceptional help preparing for college-level reading, and 85-370 Teaching in a College-Level Reading Lab.

Registrar
The Office of the Registrar determines the residence status of each student, issues University Identification cards, supervises registration procedures, assesses fees, 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, and receipt of Veteran Administration benefits.

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.

Special Support Services
Established especially for members of minority groups, low-income undergraduate students and special admission students, this office provides assistance with special needs, including requests for future career advising, study sessions and financial aid.

Speech and Hearing Clinic
The University of Iowa Speech and Hearing Clinic provides services for speech, language, and hearing problems. Any University student may receive needed services without charge. Services include diagnostic examinations, consultations, individual clinic sessions, small group sessions and referrals to other clinics as needed.

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

Writing Lab
The Individual Instruction in Writing offered by the Lab (twice a week at scheduled hours) is open to any University student—from entering freshmen and women to doctoral candidates. Each person's own writing is the content of the course for that person, and the teacher responds to what each person writes and helps him or her identify and overcome particular writing problems in personal conferences. Papers required in other courses may be written and discussed in the Lab, but the primary aim is to help people gain the competence they need to respond to any writing situation with confidence.

Any student who fears he or she cannot do the writing expected in the required Rhetoric course, may confer with the Director of the Lab about taking Individual Instruction in Writing for credit (10-9) before registering for the required course. Noncredit students may enroll throughout the semester.
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; guides its students toward familiarity with the principal ideas, facts and work methods in the various fields of natural and social science, language and literature, fine art, history and philosophy; and seeks 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 has its beginnings in the chartering of the University in 1847. It now enrolls more than three-quarters 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.
Asian Studies, B.A.
Astronomy, B.A.
Biochemistry, B.A., B.S.
Botany, B.A.
Chemistry, B.A., B.S.
Classics, B.A.
Communication Studies, B.A.
Computer Science, B.A., B.S.
Dance, B.A., B.S.
Dental Hygiene, B.S.
Early Childhood Education, B.A., B.S.
Economics, B.A., B.S.
Elementary Education, B.A., B.S.
English, 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.
Health Occupations Education, B.A., B.S.
History, B.A.
Home Economics, B.A., B.S.
Italian, B.A.
Journalism, B.A., B.S.
Latin, B.A.
Languages, B.A.
Linguistics, B.A.
Literature, Science and the Arts, B.A.
Mathematical Sciences (includes Statistics), B.A., B.S.
Medical Technology, B.S. (in General Science)
Microbiology, B.S.
Music, B.A., B.M.
Nuclear Medicine Technology, B.S. (in General Science)
Physical Education, 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 Sciences, 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 Pathology and Audiology, B.A., B.S.
Zoology, B.A.

No degree is awarded in secondary education. Prospective teachers must 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. (For a listing of advanced degrees offered in Liberal Arts subject areas, see the "Graduate College" section of the Catalog.)

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 Languages, the International Writing, Translation and Writers Workshop; and the Windhover Press. There are also schools of Journalism, Library Science, Religion and Social Work.

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

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 coursework 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 broad flexibility, rather than the traditional single major. Of the general requirements listed above, only the rhetoric skills requirement (one semester) 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 all course courses. No more than 20 100-level credits earned in one department can be applied toward the 45-credit requirement, and no more than 40 credits total earned in one department can be applied toward graduation.

Bachelor of Liberal Studies
This program is designed to serve adults who cannot attend the College as full-time, on-campus students.

Credits toward the B.L.S. degree may be earned through on-campus coursework, independent study, proficiency examinations, and/or radio, television or other audiovisual instruction.

To be admitted to the program, the student must have earned at least 62 semester hours of transferable degree credit.

The student must satisfy the College’s basic skills and core course requirements, unless he or she has been awarded the Associate in Arts (A.A.) or Associate in Science (A.S.) degree by an accredited two-year institution of higher education.

Of the 124 semester hours of credit required for the degree, at least 45 must be earned in a four-year college, in courses which have college defined as upper-level (in the College of Liberal Arts, for example, courses numbered 100 and above); 45 must be completed in courses offered by the Iowa Regents Universities; and, for graduation from The University of Iowa, 30 must be earned in courses offered by The University of Iowa.

Graduation requires a minimum grade point average of 2.0 in all coursework applied toward the degree, in all coursework completed after admission to the program, and in the 45 semester hours of upper-level coursework.

The student may develop an approved area of emphasis in his or her program, but is not required to do so.

Students admitted to the B.L.S. program are designated as "unclassified."

While the B.L.S. is awarded by the College of Liberal Arts, the program is administered by the Division of Extension and University Services, and application should be made to the Division.

Two or More Bachelor's Degrees
Students who have received 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 beyond the first 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 earned between colleges of 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.

Credit 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 courses may be applied toward College requirements for baccalaureate graduation.

Classification
Freshman: less than 28 semester hours earned Sophomore: 28 through 55 semester hours earned Junior: 56 through 89 semester hours earned Senior: more than 89 semester hours earned

Semester Load Limit
The normal schedule is 15-16 semester hours for a semester, eight for a summer session. No student may register for more than 20 semester hours in one semester, or 10 in a summer session, without the permission of the Office of the Academic Advising Officer.

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

Baccalaureate graduation from the College generally requires at least a 2.0 average on all college-level work attempted, all work attempted at the University, all work attempted in the major field and all work in the major field at the University.

Good Standing

Minimum University of Iowa and overall cumulative grade-point averages required for good standing in the College 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 who enrolled at Iowa for the first time after May, 1974, or not graduated by July, 1977, may apply no more than 16 semester hours of "pass" credit towards the bachelor's degree, and may earn this credit only in ethnic, physical education skills, mathematical skills (223H-1) and/or elective courses.

For transfer students enrolled at Iowa for the first time after May, 1974, with less than 36 semester hours of transfer credit, the "pass" credit limit is also 16; for those with more than 35 semester hours of transfer credit, the "pass" credit limit is eight.

Students enrolled as beginning freshmen before May, 1974, who graduate by July, 1977, may apply up to 32 semester hours of "pass" credit or S-F credit toward the graduation requirement.

Transfer students enrolled 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 35 semester hours of transfer credit, a maximum of 24 semester hours of "pass" credit; with 36 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 also count toward these limits.

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.

Auditing Courses

Students in the College of Liberal Arts may register for zero credit (audit) with the permission of the instructor and the adviser. The mark of "R" (registered) is assigned to those registered for zero credit if attendance and performance are satisfactory; if unsatisfactory, the mark of "W" (withdrawn) is assigned. Courses completed with a mark of "R" do not meet any graduation requirements. The listed semester hours credit for the course will be used in assessing tuition fees.

Second-Grade-Only Option

If a student repeats a university course, unless reenrollment occurs, 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 filling of a completed approval form.

Incomplete and No Report

A mark of "I" (incomplete) or "W" (no report) which is not replaced by a 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 60 semester hours of study in residence 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 during a given semester on 12 or more semester hours of coursework graded A, B, C or D 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 comprehensive achievement examinations in a number of subjects. The College of Liberal Arts grants college credit and, where appropriate, advanced placement of students who achieve satisfactory standards in 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 Standing Program in English qualifies to attempt to meet the College of Liberal Arts rhetoric requirement with credit by taking the rhetoric proficiency examinations offered before the course begins. At least two weeks before he or she registers at the University, the student should send a statement to the Director of Admissions that the student has satisfactorily completed such preparation. For information about the Advanced Standing Program in English, write to the Rhetoric Program Coordinator, The University of Iowa.

Credit by Examination
A student may earn up to 32 semester hours of credit, and/or course exemption, in the general education program of the College, or in certain introductory departmental 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 Advisory 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 core of the foreign language departments serves as advisors 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 chairmen 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 of coursework in the chosen country or area. 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 designated by the appropriate departmental chairman receives the Foreign Studies Certificate with his or her degree.

Interested students should consult the chairmen of the appropriate department:

- Classical (Ancient Greece or Rome)
- East Asian Languages and Literatures (India, China or Japan)
- French and Italian (France or Italy)
- Germanic (German or Dutch)
- Russian (Russia or Eastern Europe)
- Spanish and Portuguese (Spain, Portugal or Latin America)

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

Preprofessional (Joint Programs)
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 earns the degree, and/or liberal arts, 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 from the College of Liberal Arts upon successful completion of one academic year in the professional college or program.

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 educational 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 major are assigned advisors from their major departments; those who have not declared majors are assigned advisors from the Liberal Arts faculty at large; those in preprofessional 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 (Advisory Office administers CLEP for the College and assigns credit for satisfactory CLEP scores) and determine their eligibility to use the Second Grade Only 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 Bachelor of General Studies degree program; and concerning probation, dismissal, re-enrollment, academic discipline and any other academic matter.

Requirements
(Note: Graduation from an accredited junior college with an A.A. or A.S. degree satisfies all College graduation requirements outlined below, except the foreign language requirement.) Beginning with the Fall semester 1976-77, a minimum of 60 semester hours of credit accepted for transfer will be required for A.A. or A.S. degree registration.

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 departmental courses approved for core purposes.

With the approval of the dean of the major department, a student may be exempted from the core requirement in the area of his major. Exemption may also be granted on the basis of a comprehensive examination or a College-Level Examination Program test on the core subject.

Except literature, core courses may be taken as electives. Core courses and approved departmental options in the four core areas are as follows:
Historical-Cultural Core

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

3150-39 Problems in Human History

3-4 h.

An analysis of major themes in human history, using as examples such topics as world history; emphasis on methods of investigating and forming ideas about society and change. May be taken independently. Some as Religion 3350.

1151-53 Western Civilization

4 h. each

Emphasis on Western civilization with emphasis on political, social, economic, and cultural development. Also related to problems and critical evaluation of what humans have already written about the subject.

1151-53 Western Civilization

4 h. each

Emphasis on Western civilization with emphasis on political, social, economic, and cultural development of Europe, as related to problems and critical evaluation of what humans have already written about the subject.

1152-54 Philosophy of Man

4 h.

This course is designed to introduce the student to the major philosophical ideas about life and society, knowledge and human values, reality and the subjective. Either semester may be taken first. Some as Religion 2506.

1166 Religion in the Western World

4 h.

Examples from the Western and non-Western cultures selected from historical and systematic aspects of Hinduism, Buddhism, Islam, Judaism, and Christianity. Some as Religion 2506.

1167 Religion in Human Culture

4 h.

An examination of religions and cultures; selected aspects of religion in its relation to society, literature and art, politics, ethics, philosophy, and science. Some as Religion 2506.

1177 History and Appreciation of Art

4 h.

Renaissance of theory of art and art criticism. Fall.

1180 Art in the Western World

4 h.

Periods, style, and great personalities in painting, sculpture, and architecture from prehistoric time to present. Spring.

1182-84 Masterpieces of Music

4 h.

Representative music from classical repertory of 18th, 19th, and 20th centuries; meetings and programs by faculty, visitors and groups; lecture-discovery and prescribed music readings and reports.

1182 Art in East and West

4 h.

Great styles and movements of all world art; important works of Oriental and European architecture, sculpture, and painting analyzed and compared within their respective historical contexts.

1184 Drama in Western Culture

4 h.

Theatrical forms and traditions from ancient and modern plays; from classical Greek and seventeenth century French; parallels in painting, sculpture, and architecture. Some as Speech and Dramatic Art 3004.

1184 Drama in Western Culture

4 h.

From English and American drama, either 1184 or 1182. May be taken independently. Some as Drama and Dramatic Art 3004.

1186-88 Civilizations of Asia

4 h.

Introduction to the cultures and societies of the three major civilizations of Asia: India, China, and Japan. Some as East Asian Languages and Literatures 2916.

1186 Civilizations of Asia

4 h.

Introduction to the cultures and present condition of India, Japan, and China. Students of 1186 may be taken also in combination with any of 1129, 30, 31, 32. Some as East Asian Languages and Literatures 2916.

Literature Core

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 111:1 The Interpretation of Literature and one other core course. All core courses in literature are offered for substantial independent reading and study; stress 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 core-equivalent courses in literature, or with three semester hours of transfer credit and four semester hours of University credit for the literature core requirement.)

111:1 The Interpretation of Literature

4 h.

Interpretative strategies available in reading of poetry, narrative and drama, with some consideration of film as a literary medium.

1120 Biblical and Classical Literature

4 h.

Selections from Old and New Testament literature, Homer, Greek dramatists, Plato, Virgil and others.

1122 Medieval and Renaissance Literature

4 h.

Selections from Beowulf, Dante, Chaucer, Shakespeare, Milton and others.

1146 Idea of Tragedy

4 h.

Major representations of tragic vision of man's experience in narrative prose and drama from classical times to present.

1148 The Idea of Comedy

4 h.

Varieties of comic view of life past and present, including satire, burlesque, farce, realism, in prose and verse.

1166 Narrative Literature

4 h.

Selected specimens as well as recent developments in art of storytelling in both poetry and prose.

1177 Lyric Poetry

4 h.

Poetry from major periods of development as well as contemporary verse, with emphasis on distinctive language and major forms of poetry.

1180 Literature of the Theater

4 h.

Selected plays; Shakespeare's time to present with some consideration of dramatic theory and other genres.

1198 American Literature

4 h.

Major works of American autodidactism from Thoreau to the present.

1180 French Literature of Comedelmen

4 h.

Masterpieces of 18th- and 19th-century literature. Some as French 910.

1180 The Classical View

4 h.

Readings from Homer, Virgil, B. Auguste and Apuleius in English translation. Some as Greek 1413.

1194 Literature of the African Peoples

4 h.

Some as American Civilization 418.

1177 Germanic Heroic and Erotic Literature of the Middle Ages

4 h.

Three epic epics: Beowulf, Tristan and the Wlieltingelied, and other readings from the period, in English. Some as German 917.

1184 Contemporary Latin American Narrative

4 h.

Themes and narrative techniques of major authors of the continent, in English translation. Some as Spanish 356.

1186 Asian-American Literature

4 h.

Major authors in the cultures of traditional India and Confucian China in English translation. Some as East Asian Languages and Literatures 3009 and 3010.

1194 Asian-American Literature

4 h.

Reading in English translations of major authors of traditional India and Japan. Some as East Asian Languages and Literature 3020 and 3021.

Natural Science Core

(Transfer students may meet this core requirement with eight semester hours of transfer credit in core-equivalent courses in astronomy, biochemistry, botany, biology, chemistry, geology, mathematics, microbiology, physics and zoology.)

1131 General Biology

4 h.

Life Science

1131 General Science

4 h.

Life Science

1131 Human Biology

4 h.

Life Science

1132 Ecology and Evolution

4 h.

Life Science

1132 Evolution and Development

4 h.

Life Science

1132 Evolution and Development

4 h.
earthquake, mountain-building, or-mental drift; for non-science students. Lectures, laboratory. Not open to students who have had Geology 121. 12:3-12:5.

11:54 Man and His Physical Environment 4 s.h.
Course, air pollution, pressure on natural environments, water resources and problems, environmental geology, volcanology, laboratory. For non-science students. Not open to students who have had Geology 12:2 or 12:4.

Physical Sciences

11:56 Chemistry and Physics of the Environment 4 s.h.
Chemistry and physics of geology of our planet; air, water, and soil pollution, energy in the environment, chemistry of the elements, physical laws of balance of nature; all relevant principles of physics and chemistry at elementary level. For non-science students. Lectures, discussion. Same as Physics and Astronomy 20:35.

11:58 Technology and Man 4 s.h.
Develops selected areas of chemistry from basic to modern research and applications. For non-science majors. Lectures, discussion, laboratory.

Departmental Options
Any of the courses listed below may be used in any combination (except as indicated) with any other courses on this or the above core (in 11:3-11:3) to satisfy the natural science core requirement. For descriptions of the departmental courses, see the appropriate departmental section of the Catalog.

Botany
2:1 Introduction to Botany 4 s.h.
2:1* Evolution of Land Plants 4 s.h.
2:3 Biology of the Loyal Flora 4 s.h.

Chemistry
4:1 Principles of Chemistry I 3 s.h.
or 4:7 General Chemistry I 3 s.h.
4:4 Principles of Chemistry II 3 s.h.
4:6 Elementary Chemistry Laboratory 2 s.h.
4:8 General Chemistry II 3 s.h.
4:9 General Chemistry Laboratory 2 s.h.

General Science
(Open only to elementary and special education majors.)
97:55 Science Foundation I 3 s.h.
97:56 Science Foundation II 3 s.h.
97:112 Advanced Science Foundations 3 s.h.

Zoology
37:3 Principles of Animal Biology 5 s.h.

Sociology
30:3 Basic Physics (may not be combined with any other physics core option) 4 s.h.
29:50 Moders Astronomy 4 s.h.
29:61-62 General Astronomy 3-4 s.h.
29:105 General Astronomy 4 s.h.

11:56 Introduction to Botany 4 s.h.
2:1 Introduction to Botany 4 s.h.
2:1* Evolution of Land Plants 4 s.h.
2:3 Biology of the Loyal Flora 4 s.h.

Chemistry
4:1 Principles of Chemistry I 3 s.h.
or 4:7 General Chemistry I 3 s.h.
4:4 Principles of Chemistry II 3 s.h.
4:6 Elementary Chemistry Laboratory 2 s.h.
4:8 General Chemistry II 3 s.h.
4:9 General Chemistry Laboratory 2 s.h.

Geology
12:5 Introduction to Geology (may not be taken in combination with 11:23) 4 s.h.

Mathematics
22M:10 Fundamentals of College Mathematics I 4 s.h.
or 22M:11 Fundamentals of College Mathematics II 4 s.h.

Physics and Astronomy
29:1 College Physics 4 s.h.
or 29:17 Introductory Physics I 4 s.h.
29:2 College Physics 4 s.h.
or 29:18 Introductory Physics II 4 s.h.

Anthropology
113:3 Introduction to the Study of Culture and Society 4 s.h.
113:10 The World’s Peoples 4 s.h.

Economics
68:1 Principles of Economics 4 s.h.
or 68:2 Principles of Economics 4 s.h.

Geography
44:1 Introduction to Human Geography 4 s.h.
44:2 Natural Environment and Man 4 s.h.
44:11 Introduction to Social Geography 4 s.h.
44:19 Natural Environmental Issues 2 s.h.
44:30 Introduction to Economic Geography 3 s.h.
44:35 Introduction to Urban Geography 3 s.h.

Linguistics
103:11 Language and Society 4 s.h.

Political Science
30:1 Introduction to American Politics 4 s.h.
30:2 Introduction to Politics 4 s.h.
30:10 Introduction to Political Behavior 4 s.h.
30:11 Introduction to Political Theory 4 s.h.
30:12 Introduction to Comparative Politics 4 s.h.
30:13 Introduction to World Politics 4 s.h.
30:100 The American Political System 4 s.h.
31:1 Elementary Psychology 4 s.h.
or 31:3 General Psychology 4 s.h.

Sociology
34:1 Introduction to Sociology: Principles 4 s.h.
34:5 Introduction to Sociology: Problems 4 s.h.

College of Liberal Arts
Foreign Language Requirements

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.

Mathematics Requirement

The general requirement in mathematics can be met by at least two and one-half years of high school mathematics, or a minimum score of 22 on the mathematics section of the American College Tests, or completion of the University course 22M.1 Basic Mathematical Techniques or a college-level course in Mathematics.

Physical Education Skills Requirement

This requirement may be met with four semester hours of credit in the physical education skills courses, or by satisfactory performance in one of the comprehensive physical educational skills tests given at approximately times each semester. The student may receive up to four semester hours of "pass" credit for successful completion of the test.

Freshmen who take the test but fail it must register for physical education courses for at least one semester before attempting the test again. Students who have not passed the test before the beginning of the sophomore year must register for physical education skills coursework at that time; those who wish to take the sophomore course for credit. No more than four semester hours of credit in physical education skills may be counted toward a baccalaureate degree.

The instructional program in physical education skills provides for a wide variety of activities: archery, badminton, ballet, bowling, canoeing, curling and skating, conditioning, diving, fencing, field hockey, figure skate, flag football, folk and square dance, golf, gymnastics, handball, jai-alai, lacrosse, life saving, modern dance, paddleball, recreational games, relaxation, riding, rhythmic gymnastics, rugby, rugby, self defense, soccer, skiing, softball, squash, swimming, table tennis, tennis, track and field, trampoline and tumbling, volleyball, water polo, water safety instructors, weight control, weight training, wrestling. The program also gives the student an opportunity to correct physical defects which respond to therapeutic exercises. (Students who have passed their 22nd birthday prior to admission may be exempted from the physical education skills requirement. Students who present evidence of having completed a basic training program in some branch of military service are exempted from the requirement. Transfer students must meet the requirement with four semester hours of transfer credit in physical education or with two consecutive terms of non-transferable physical education and four semester hours of University physical education skills credit. Transfer students admitted to the University with more than 40 semester hours of transfer credit are exempted from the requirement.)

Rhetoric Skills Requirement

The College of Liberal Arts requires all entering undergraduate students to enroll in rhetoric coursework each semester 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.

Students are originally assigned to Rhetoric courses on the basis of American College Test scores. Most entering freshmen are assigned either to the two-semester, eight-credit sequence, 10.1, 2 Rhetoric, or to the accelerated one-semester, four-credit course, 10.3, Rhetoric.

Students initially assigned to and registered for 10.3, 10.4, 360.25 may attempt to satisfy all or part of the Rhetoric requirements 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 indication. Students in 10.1 who demonstrate above average reading speed and comprehension and above average writing skill may be advised to switch to 10.3, for example.

Students whose early work indicates a need for individualized instruction beyond their classwork may enroll for non-credit work in the Reading and/or Writing Labs offered by the Rhetoric Program. Some students may be advised to switch to 10.6, a one-semester, two-credit course of individualized instruction in reading, and/or to 10.9, 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 coursework, 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 10.2, 10.3, 10.4 or 360.25. Students admitted to the University with 40 or more transfer credits are excused from the rhetoric requirement.)

Admission Requirements

To qualify for admission to the College of Liberal Arts, the applicant must meet the College requirements outlined below, and all 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, access to standardized tests and certification of graduation. An applicant may be tentatively admitted after he or she has completed the junior year in high school, but admission will not be final until receipt of the final transcript and certification of high school graduation. A graduate of an approved Iowa high school who has the proper subject-matter background, is in the upper one-half of his or her graduating class and meets specific curriculum 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 option for admissions by probation or trial enroll- ment may not be open to these students. Undergraduate Students Transferring from Other Colleges

Students from Accredited Colleges and Universities

Transcripts of records are given full value if they come from colleges or universities accredited by the North Central Association of Colleges and Secondary Schools or similar regional associations. The recommendations contained in the current issue of the Report of Credentialed 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 signature and signature of the official in charge of records from each college or university the student has previously attended. The transcript must also submit any other records that bolster the college may require to support his her application for admission.

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

An applicant who successfully completes the examinations may be admitted on probation.

A graduate of a nonaccredited high school under academic suspension from the last college attended will not be considered for admission during the period of suspension or, if suspended for an indefinite period, will not be considered until six months have passed since the last date of attendance. When eligible for consideration the applicant's record will be reviewed at 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 school. When it becomes proper, to consider an application from a student under suspension, the College must take into account the facts of the previous suspension. An applicant granted admission under these circumstances will be required to be admitted on probation, and his or her admission will be subject to cancellation.

Students from Nonaccredited Colleges

The college may refuse recognition credit from a nonaccredited college or may admit the applicant on a probationary basis and provide a means for the validation of some or all of the credit. The validation period will normally be one semester and will ordinarily be a full academic year. The College will specify to the student the terms of the validation process at the time of provisional admission. Each student from a nonaccredited college is considered on his or her merits, and admission or rejection is at the discretion of the admissions officer.

Afro-American Studies

Program chairman: Davis T. Turner. Faculty: The Afro-American Studies Program is interdisciplinary, it draws on faculty from within and outside the college for courses, for example, American Civilization, Anthropology, Business Administration, Chemistry, English, Geography, History, Sociology, and Writing. The Program offers B.A., M.A., M.B.A. degrees. The Afro-American Studies Program offers a concentration in Afro-American Civilizations.

The Afro-American Studies Program focuses on the study of the people of African ancestry in the North American colonies and the United States of America from the 17th century to the present. Although the Program purposes 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 a continuing effort to expand the perspectives by developing courses which will fuse 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 relationship 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, several courses 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 being neglected, the new curricula prepare students to teach Afro-American studies, to train other teachers, 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 the teaching and administration of educators 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 America.
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 African-American Studies is intended primarily for individuals who expect to assume roles in which they will direct research for Graduate School 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 African-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 four 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 soil subject by taking (45:191) Introduction to American Civilization and (45:231) 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 appro-

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 1968 The University of Iowa each summer has served as host for an Institute in Afro-American Studies for college and university teachers. The institute, which brings renowned artists and lecturers to the campus, has focused on such topics as the Harlem Renaissance, Richard Wright, W.E.B. DuBois, black Americans in theater and slave narratives. Although students in residence at the University are not eligible to be official members of the Institute, 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 Theater affects participants as opportunity for instruction and experience in theoretical productions of plays by black authors.

Afro-American Cultural Center

The Afro-American Studies Program encourages participation in the facilities of the Afro-American Cultural Center. The Center serves as a museum and library for educational and cultural purposes and exhibits of black culture. Thus, it provides cultural enrichment 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 community.

Black Genesis Troop

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

Courses

Afro-American Studies and Related Areas

48610 Black Poetry Workshop 3 s.h.

48611 Contemporary Black Experience 3 s.h.

48620 Selected Readings in Afro-American History 3 s.h.

48630 Introduction to Afro-American Culture: An Aesthetic Approach 3 s.h.

48640 African Drama 3 s.h.
American Civilization

Program chairman (acting): John Buehler

American Civilization provides a broad multi-disciplinary knowledge of American culture and experience. It is open to students majoring in American Studies.

Significant Courses Related to Afro-American Studies

For course descriptions, see appropriate sections of this catalog.

Anthropology
113:118 Social Anthropology of the Caribbean 3 s.h.
113:119 Urban Anthropology 3 s.h.
113:120 Peoples of West Africa 3 s.h.

Art

Business Administration
68:205 Business and Society 3 s.h.
68:225 Employment Relations and Public Policy 3 s.h.

Economics
68:137 Problems in Urban Economics 3 s.h.

Education
7F:104 Education in Newly-Developing Countries 2-3 s.h.
7F:130 Educational Sociology 2-3 s.h.
7F:380 Seminar: Value Problems in the Administration of American Education 3 s.h.
7P:109 Socialization of the School-Age Child 2-3 s.h.
7U:133 The Culturally Different in Educational Settings 3 s.h.

French
9:183 Introduction to the French-Speaking World 3 s.h.

History
16:61 American History, 1492-1877 3 s.h.
16:62 American History, 1871-Present 3 s.h.

Sociology

Urban and Regional Planning
102:102 Urban Politics 3 s.h.
broadsheet of a document, as if you were reading it naturally.

Declarative candidates prepare themselves in four fields: American civilization, American literature or history, and two other fields of American culture. In addition to traditional departmental fields (e.g., literature, history, at history, film, political science, sociology), these may include such interdisciplinary fields as popular culture, Afro-American studies, women's studies, colonial cultures, etc. The student will also be responsible for knowledge of any subjects his thesis committee deems valuable for the completion of his dissertation.

Qualification

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

Final Oral Examination

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

Languages

A language and tool requirement or the completion of an introductory course in one or two of the above fields (e.g., statistics, computer science). This course should be attended to as early as possible and certainly before the candidate takes the comprehensive examination.

Special Facilities

The University is known for creative work in the arts; the facility is thus exceptionally well equipped to offer cultural studies of such areas as American art and architecture, literature, film, and music. The cooperation of the history and social science areas has been equally valuable.

Courses

Primarily for Undergraduates

401 American Civilization I

402 American Civilization II

402 African Literature

402 Black Poetry Workshop

411 Contemporary Black Experience

416 Introduction to Afro-American Culture

417 Afro-American Literature I

417 Afro-American Literature II

418 20th Century Afro-American Poetry

421 Reminiscences in Afro-American Culture

424 Black Literature and Experience

425 American Civilization
Anthropology

49.126 Politics and the Black Worker 3 s.h.

A study of the role of race in the formation of political ideologies among African American workers.

49.252 Religion and Black Culture 3 s.h.

A study of the development of black culture, religion, and philosophy in various contexts of the world. Emphasis on religious studies. Same as Religious Studies 32, 315.

49.236 Semiotics: Problems in American Art 3-6 s.h.

Same as AJCN Theory 19, 296.

49.366 Seminar in the History of American Women 3 s.h.

Same as History 12, 89.

49.366 Seminar in Afro-American History 3 s.h.

Advanced course in Afro-American history, with emphasis on selected topics. Same as History 16, 225.

49.366 Readings in Afro-American History 3 s.h.

Introduction to bibliography and literature for the study of Afro-American history. Same as History 16, 226.

49.367 Readings in the History of American Women 3 s.h.

Same as History 16, 227.

49.315 Seminar in Study of Afro-American Literature 3 s.h.

Examination of selected works of African American writers and the cultural and social conditions associated with them. Same as English 49, 396.

49.315 Advanced Seminar in Afro-American Culture 3 s.h.

An intensive study of selected topics in Afro-American Studies. Prerequisite: basic course in Afro-American Studies, and 49.211.

49.314 Seminar: Advanced Study in Afro-American Drama 3 s.h.

3-week study of selected Afro-American playwrights or performers. Prerequisite: 49.315 or equivalent.

49.361 Human Rights and World Community 3 s.h.

Same as Political Science 30, 361, Religion 32, 361, Sociology 19, 260.

49.366 American Criticisms and Culture 3 s.h.

Same as English 123, 21.

49.467 African Studies: Functions in Afro-American Literature 3 s.h.

Individual explorations of selected problems in Afro-American culture and experience. Primarily for graduate students majoring in Afro-American Studies.

49.488 Graduate: American Criticism and Culture 3 s.h.

Same as English 496.

49.520 Special Project Graduate 3 s.h.

49.592 M.A. Thesis 3 s.h.

49.699 Thematic Thesis 3 s.h.

49.485 American Film and American Culture: Filmic representations of selected topics, e.g., Afro-American history, culture, and society in American film and television. Prerequisite: 49.315 or equivalent.

49.485 American Film and American Culture 3 s.h.

Investigation of a selected group of American topics as they reflect, shape, or influence aspects of American culture. Same as Speech and Dramatic Art 308, 400.

Course offered: Spring, Fall, Winter, Summer

49.499 Seminar in the Future of Man 3 s.h.

In search of the Future of Man 3 s.h.

49.717 In Search of the American Dream 3 s.h.

49.703 East American Culture 3 s.h.

49.702 The Making of American Values 3 s.h.

49.100 The Ascend of Man 3 s.h.

Anthropology

Department: Richard Sklar, Jr.

Faculty: Professors: George E. Brown, Jr., Robert E. Sherrill, Jr., associate professor Thomas Charnock, C. Paul Dommergues, Robert W. Montella, Martin E. McBurney, and associate professor James Croy, David W. Grayson, E. Elliott Klauss, Douglas Millet; professors emeritus: Charles Osgood, A.A., M.A., Ph.D.

All human cultures, whether historical or contemporary, simple or complex, are part of anthropology's study. 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 interrelations among society, personality and shared values 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 sub-
cultures other than his or her own.

Majors must take at least 20 semester hours of coursework in anthropology, including 11.5.3 Introduction to the Study of Culture and Society, 11.5.10 The World's Peoples and 11.5.11 An 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, religions activity in folk and ritual settings, primitive art, biological anthropology and urban anthropology. Specialization is discouraged in the undergraduate program, which is designed to give the student the broadest possible cross-cultural background. Coursework is encouraged in such related areas as sociology, linguistics, psychology, geography, zoology, and statistics. Students are also encouraged to participate in archaeological field research.

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 3.0 overall and 3.2 in anthropology. In addition to the regular requirements for a major in anthropology, honors students must complete the Department's Honors Seminar and Honors Research courses.

Field Research

Opportunities are available for students to participate in archaeological field research either in the U.S. or abroad. Under the direction of University archeologists, they acquire on-the-job knowledge of archeological techniques and methods of interpreting artifacts.

Graduate Program

Although dedicated to the holistic view of anthropology, the Department's emphasis lies in archaeology and social-cultural anthropology. The Department offers a major degree leading to the Master of Arts and Doctor of Philosophy in anthropology.

M.A. Program

The M.A. program is general in nature, designed to prepare the student to deal with any aspect of anthropology at 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 32 to 36, depending upon the student's previous educational training. The non-thesis program re-
requires at least 36 semester hours of graduate work. A 36-hour M.A. degree without thesis is available in conjunction with a minor concentration in another field.

The first-year graduate student entering the program with a B.A. degree in art discipline, or with a master's degree in a discipline other than anthropology, must satisfactorily complete the core course sequence, which includes 11.114 Social Anthropology, 11.156 Archaeology Theory and Method, 11.171 Anthropological Linguistics and 11.285 Biological Anthropology and their related graduate seminars, and must complete one additional course in social anthropology, archaeology, linguistics, research methods or statistics, and two ethnographic area courses. Students with an interest in archaeology are required to be trained in field techniques.

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

Ph.D. in Anthropology

The Ph.D. degree represents a balance between general competence in all the subfields 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 working 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, computer programming, geology or palaeontology);
- Ethnographic or technological specialization in a major geographic area approved by the student's Ph.D. advisory committee, e.g., North America, Mesopotamia, Oceania, Southeast Asia or the circumtropical region;
- Specialization in a minor and major topic area (e.g., kinship or politics, 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.

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 written example of their previous work (e.g., a term paper or an original experiment). Applicants with an M.A. degree from another university are required to submit a copy of their master's thesis; in cases where an M.A. has been granted without thesis or where the master's thesis is not yet complete, a year of teaching experiences or a superior paper completed in graduate school should be submitted. It is desirable that the applicant have a 3.0 grade-point average or better. However, applicants with lower grade-point averages 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 Museum of Iowa's Archaeological Collection and the University is a participant in Human Relations Area Files, an extensively annotated bibliography of source materials on the peoples of the world—their environments, 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. A field laboratory and extensive archaeological research data are maintained in Mexico.

Financial Assistance

A limited number of financial aids are available in the form of teaching or research assistantships. Application for an award should be made directly to the Chairman, Department of Anthropology.

Faculty Strengths

Members of the anthropology faculty have studied and lived in Spain, Southeast Asia, Oceania, the Orient, Africa, Thailand, the Caribbean, Mexico and the American subarctic. Ongoing research in the Department includes work on such problems as precontact trade routes in the Tehuacán Valley of Mexico, patterns of political development in emerging countries, comparative ethnographic studies of hunting-gathering groups, archaeological investigation of paleo-lufts sites in Iowa, relation of alcohol and culture in Oceania, and field-curing practices and beliefs among the Lahu of northern Thailand. During the past two years, faculty members have continued their field research in Mexico, Liberia, the Canadian subarctic, the Caribbean, Micronesia, and Thailand.
Art and Art History

Art and Art History

School director: Walter J. Tomasci


The University of Iowa School of Art and Art History is recognized as one of the ten leading university-based art schools in the United States. It pioneered the art-in-education concept, appointing 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 permanent faculty.

The emphasis on the creative production of its faculty reflects an educational philosophy which made Iowa one of the first universities 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 exhibitions, and its growing collection of art works of all periods and nations, but also through its continuing program of employing 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 benefit from a formal study of the traditions of art, and a broad view of historical development from personal experience with the creative process.

The fluidity 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 visiting lecturers for short-term workshops in addition to the permanent faculty continues to keep students directly involved with current scholarship.

A number of the School's graduates enjoy success as practicing professional artists, art historians, art department administrators, museum directors and curators, there being designers and teachers. Regardless of employment depressions, Iowa graduates have traditionally found acceptable positions. This condition continues, even though the emphasis has always been placed on the fine arts and not the "commercial" art is offered in the program.

As far as possible the design of academic programs is structured to meet the individual student's needs. In addition to general programs in studio arts and art history can be developed. The major requirements are broad and flexible, reflecting specialization. The art history major requires at least an introduction to studio work. The studio major requires development of a foundation in a major course, and in at least six areas of studio art. The aim of the joint curriculum is to give students a basic understanding of art and aesthetics; it does not focus on particular short-term styles.

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, these must include two or more semesters of a foreign language and at least 15 semester hours in at least three of these related areas: art history, classics, drama, history, language, literature, music, philosophy, religion, or sociology.

Studio Emphasis

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

Studio

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A:001</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>1A:002</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>1A:003</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>1A:004</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>1A:005</td>
<td>2 s.h.</td>
</tr>
</tbody>
</table>

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 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.

Transfer studio majors, regardless of the number of hours being transferred in art, must complete at The University of Iowa a minimum of:

3 semester hours in art history and 12 semester hours in studio, including at least two different studio areas. In addition, all course distribution requirements must be satisfied.

Art History

The Bachelor of Arts degree with an emphasis in art history requires the following courses and credits in art:

Art History Emphasis

Studio

Art History

8 s.h.
Art and Art History

Art History

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:37</td>
<td>History and Appreciation of Art</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>11:38</td>
<td>Art in the Western World</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>or 11:42</td>
<td>Art in East and West</td>
<td>4 s.h.</td>
</tr>
</tbody>
</table>

Intermediate and advanced at least 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 may 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 complete 18:198 Concepts in Art Education and 18:198 Art Education Studio.

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

- 7E:143 Methods: Art 3 s.h.
- 7E:105 Advanced Methods: Art 3 s.h.
- 75:187 Seminar: Curriculum & Student Teaching (Art Section) 1-3 s.h.
- 7E:197 Aesthetic Education (elective) 1-3 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 semester hours of credit in non-art courses, and earn at least 62 semester hours of credit in all art and art history courses, which must include the following:

History of Art

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:37</td>
<td>History and Appreciation of Art</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>11:38</td>
<td>Art in the Western World</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>or 11:42</td>
<td>Art in East and West</td>
<td>4 s.h.</td>
</tr>
</tbody>
</table>

Two intermediate-level courses 6 s.h.

Studio

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A:001</td>
<td>Colloquium</td>
<td>1 s.h.</td>
</tr>
<tr>
<td>1A:002</td>
<td>Colloquium</td>
<td>1 s.h.</td>
</tr>
<tr>
<td>1A:003</td>
<td>Basic Drawing</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>1A:004</td>
<td>Basic Design</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>1A:005</td>
<td>Inter-dimensional Concepts</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

At least one fundamental course from six of the following areas:

- Ceramics 2 s.h.
- Design 2 s.h.
- Drawing 2 s.h.
- Metalworking and Jewelry 2 s.h.
- Multimedia 2 s.h.
- Painting 2 s.h.
- Photography 2 s.h.
- Printmaking 2 s.h.
- Sculpture 2 s.h.

At least four semesters of course work in the major studio area for a minimum of 9 s.h.

Complete at least the second semester of course work in each of two minor studio areas (of selected from among one of the six required areas), 6 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 to 62 semester hours.

Transfer studio majors, regardless of the number of hours being transferred in art, must complete at least 24 semester hours in art history and a minimum of 12 semester hours in studio, including at least two different studio areas.

In addition, all course distribution requirements must be satisfied, including the studio major and minors.

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. Application is made following completion of the basic courses. Students obtain the review form from an adviser and make an appointment with the faculty in the proposed major area of concentration for the day of the B.F.A. review. Admission 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 18:198 Concepts in Art Education and 18:198 Art Education Studio in their 62 semester hours of art. See the Bachelor of Arts section of the Catalog for general requirements in art education.

Graduate Programs

Note: A student who wishes to prepare for undergraduate teaching 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 those two areas. Such a combination generally requires one or two additional semesters.

Art History

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 movements of world art and gain proficiency in techniques of research within selected areas. Spe-
Art and Art History

cific 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 including the follow-
ing:

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-
quited 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. Con-
sideration will be given by the studio faculty to the lesser prepa-
rations and/or aptitude of the art history major, who will be permitted to take studio courses under individual instruction and/or on an S/U basis. M.A. degree candidates with undergraduate majors in art history are encouraged to take courses outside the School.

A student preparing to teach both in 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 major, 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 art 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 examination of an appropriate University of Iowa language department, satisfactory completion of the final semester of a Ph.D. language 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 writ-
en and oral examination, approximately four hours in length, broadly covering the entire field of art history. The examination normally is given at the beginning of each 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 substantial research paper (approximately 20-40 pages in length), which will be filed in the Art Library. The research paper may emerge from one or more seminar or regular coursework. It must be acceptable 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 semester preceding the semester in which the degree is to be taken. The research paper must be submitted no later than the midpoint 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 8 hours in courses in three areas of art history:

- Ancient (up to Early Christian, ca. 300 A.D.)
- Medieval (ca. 300-1300 A.D.)
- Renaissance or Baroque (ca. 1570)

19th Century or Modern (from ca. 1750)

The student may have taken these courses as an undergraduate or a graduate student, but the courses should be equivalent to one-
semester one-hundred-level course 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 Chris-
tian 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 assessed to ascertain in which areas course distribution deficiencies exist. To remedy the deficiencies, the student will normally register in 100-level courses in the appropriate areas, either for credit or audit.

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-
dge of monuments, an understanding of artistic development and a knowledge of methods of research within certain specialized areas of world art to be selected by the student in conjunction with appropriate faculty members.

The degree requires a minimum of 72 semester hours of gradu-
ate 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 required to take the School’s M.A. comprehensive examination within the first two regularly-scheduled examination dates following admis-

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 majors in European art, one language normally will be German; for majors in non-European art, Latin, 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 (six hours) and two minor fields (three hours each) selected by the student in consultation with his or her advisor and approved by the art history faculty. At least one minor must be concerned
with an art historical period or area remote from the major field. One minor field may be related to the major; this field may be in a discipline or disciplines outside the School, e.g., in religion, history or philosophy. The oral portion of the comprehensive examination is given by a committee of not less than 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 not less than five members of the graduate faculty, one of whom must be from outside the School. For full details, consult the Manual of the Graduate College.

**Admission**

Applicants for admission to the Graduate College to major in art history should send the application form, application fee and transcripts to the Director of Admissions, Calvin Hall. A term paper, or other examples of ability to write in the field, and letters of recommendation from three references should be sent to the Art History Admissions Committee, Art Building.

Deadline for receipt of completed applications is June 15 for the fall semester, November 15 for the spring semester, or April 15 for summer registration.

**Art Education**

**Master of Arts in Art Education**

Requirements for the M.A. in art education are:

- The B.A. or B.F.A. in art equivalent to that offered at the University of Iowa and teaching certification in art;
- Completion of 36 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 program;
- An oral and/or written examination in art education and a related field;
- A written thesis based on research in art education or art history 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).

**Admission**

Applicants for admission to the Graduate College to major in art education should send the application form, application fee, and transcripts to the Director of Admissions, Calvin Hall. A term paper or other example of ability to write in the field plus a selection of slides or photographs of creative work in the applicant's major studio area should be sent to the Art Education Admissions Committee, Art Building.

Deadline for receipt of completed applications is June 15 for the fall semester, November 15 for the spring semester, or April 15 for summer registration.

**Studio**

**Master of Arts in Studio Art**

The M.A. in studio may be taken with a major in painting, drawing, sculpture, prints, design, photography, ceramics, metalworking and jewelry, or multimedia. The degree requires:

- The B.A. or B.F.A. in art equivalent to that offered at the University of Iowa, including deficiencies, if any, may be made up concurrently with, but are in addition to, graduate requirements;
- A minimum of 36 semester hours of graduate work, including at least 12 semester hours in a major studio subject, a total of from 21 to 29 semester hours in studio courses, nine semester hours in art 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 University of Iowa are required to take at least one drawing course during the first year.

A student preparing to teach in both the studio and art history areas may offer an art history minor of 15 semester hours, including 11H-294 Methodology of Art History and Criticism and one other seminar. These hours are in addition to the university's undergraduate requirement for an art history major, and in combination with the undergraduate hours must satisfy the distribution requirement for art history.

The **Thesis**

Majors in studio must submit a thesis of selected studio work. An additional written thesis is required, and may be a brief statement of the student's technical, aesthetic and/or psychological approach; unless the advisor assigns an art history or technical subject. If technical, content will be supervised by the studio advisor; if historical, it will be supervised by an art historian. In the latter case the student should register for thesis credit of 1 s.h. in 1H-302 M.A. Written Thesis.

Such credits are applicable to the total number required for graduation but are in addition to other requirements for the M.A. degree.

**Master of Fine Arts (studio only)**

The M.F.A. may be taken with a studio major in painting, drawing, sculpture, prints, design, photography, ceramics, metalworking and jewelry, or multimedia. The degree requires:

- The M.A. degree in art equivalent to that offered at the University 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 eight semester hours in courses outside the school.

Acceptance of studio thesis supervision and advisory responsibility by a member of the staff qualified in the student's chosen field of specialization.

Acceptance of responsibility for supervising the writing, thesis committee, and faculty conference for the candidate's progress and final review and acceptance of the thesis.

At hours accumulated toward an M.A. degree earned at Iowa are applicable to the M.F.A. degree, with the exception of thesis credits. Approved M.A. credits from another accredited college or university are applicable within the limits of the 24-4.0h. 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 invited 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.

Admission

The admission procedure for graduate studio programs includes a screening and a final review of applications. Final screenings are conducted at the screening committee's first regular meeting following receipt of all of the applicant's supporting material. Contact the School for meeting dates.

Painting, ceramics, design, metalsworking or jewelry, or multimedia majors must submit slides and/or photographs of their work in their major field. Only applicants who are in residence at the University may submit original work in these areas.

Drawing majors must submit drawings (include figure drawings).

Philosophy majors must submit from 6 to 20 original prints and original drawings.

Photography majors must submit a selection of original photographs.

Scripture majors should send 8x10 black-and-white photographs, if color is important.

Applicants must also submit examples of their work in other areas.

These letters of recommendation are also required.

Facilities

School facilities include an art library containing 42,000 volumes; a visual materials library containing 17,000 slides and 60,000 photographs; a kiln with eight electric kilns; a well-equipped kiln room; kilns sufficiently large for large-capacity kilns; a large shop for woodworking, metalworking and industrial design; an electroforming equipment; and video equipment.

While not a School of Art and Art History facility, the University's Center for New Performing Arts involves School of Art and Art History people in most of its activities. The Center was established by the Rockefeller Foundation to encourage collaboration among such areas as art, dance, writing, film, music and theatre.

Assistantships and Scholarships

Assistantships paying approximately $3,800 per academic year for 20 hours of departmental duties are available to graduate students on a competitive basis. Half-scale 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 enrolling 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.

Courses

Art History

Primary for Undergraduates

H102 Introduction to Primitive Art 3.0h.
2.0h.

H121 Introduction to Islamic Art 3.0h.
2.0h.

H124 Introduction to Oriental Art 3.0h.
2.0h.

H125 Introduction to Medieval Art 3.0h.
2.0h.

H126 Introduction to Renaissance Art 3.0h.
2.0h.

H126 Introduction to Renaissance Art 3.0h.
2.0h.

H129 Introduction to Modern Art 3.0h.
2.0h.

H130 Visual Experience through the Print Medium 3.0h.
2.0h.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1H/196</td>
<td>Theory and Criticism in Contemporary Art</td>
<td>3</td>
<td>European and American relation and theory from World War II to the present.</td>
</tr>
<tr>
<td>1H/197</td>
<td>Theory and Form in Western Art</td>
<td>3</td>
<td>Relationship of criticism and theory to painting and sculpture in Europe.</td>
</tr>
</tbody>
</table>

**Courses Primarily for Graduates**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1H/215</td>
<td>Advanced Oriental Art: India</td>
<td>3</td>
<td>Introduction to the development of Indian art from the prehistoric period to the medieval period.</td>
</tr>
<tr>
<td>1H/216</td>
<td>Seminar: Problems in Oriental Art</td>
<td>3</td>
<td>Advanced study of specific problems in the field of Oriental art.</td>
</tr>
<tr>
<td>1H/221</td>
<td>Seminar: Problems in Southeast Asia and Meopotamia Art</td>
<td>3</td>
<td>Study of the art of Southeast Asia and Mesopotamia.</td>
</tr>
<tr>
<td>1H/225</td>
<td>Seminar: Problems in Andean Art</td>
<td>3</td>
<td>Advanced study of the art of the Andes.</td>
</tr>
</tbody>
</table>

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<tr>
<th>Course Code</th>
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<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1H/230</td>
<td>Seminar: Problems in Early Christian and Byzantine Art</td>
<td>3</td>
<td>Advanced study of the art of the early Christian and Byzantine periods.</td>
</tr>
<tr>
<td>1H/231</td>
<td>Seminar in Greek and Roman Art</td>
<td>3</td>
<td>Advanced study of Greek and Roman art.</td>
</tr>
<tr>
<td>1H/232</td>
<td>Seminar: Problems in Russian Renaissance Art</td>
<td>3</td>
<td>Advanced study of Russian art in the Renaissance period.</td>
</tr>
<tr>
<td>1H/237</td>
<td>Seminar: Problems in Italian Renaissance Art</td>
<td>3</td>
<td>Advanced study of Italian art in the Renaissance period.</td>
</tr>
<tr>
<td>1H/238</td>
<td>Seminar: Problems in 19th Century Art</td>
<td>3</td>
<td>Advanced study of 19th century art.</td>
</tr>
<tr>
<td>1H/239</td>
<td>Seminar: Problems in Modern Art</td>
<td>3</td>
<td>Advanced study of modern art.</td>
</tr>
<tr>
<td>1H/242</td>
<td>Seminar: Methodology of Art History and Criticism</td>
<td>3</td>
<td>Methodological approaches to the study of art history and criticism.</td>
</tr>
</tbody>
</table>

**Use of Library and Other Investigative Materials**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1H/250</td>
<td>Directed Studies</td>
<td>1</td>
<td>Individualized study under the direction of a faculty member.</td>
</tr>
<tr>
<td>1H/251</td>
<td>M.A. Written Thesis</td>
<td>3</td>
<td>Preparation and submission of a written thesis.</td>
</tr>
<tr>
<td>1H/252</td>
<td>M.A. Written Thesis</td>
<td>3</td>
<td>Preparation and submission of a written thesis.</td>
</tr>
<tr>
<td>1H/254</td>
<td>Ph.D. Written Thesis</td>
<td>3</td>
<td>Preparation and submission of a written thesis.</td>
</tr>
</tbody>
</table>

**Studio**

Note: Studio courses numbered between 1 and 99 are primarily for undergraduates and only those which are specified may be repeated. Studio courses numbered between 100 and 199 are offered both as regular class and may be repeated except where specified. Registration for one four-clock-hour criticism section is for three semester hours of credit and requires five clock-hours per week of assignments to be completed outside of class. With permission of their advisors and the course instructors, students may take more than one section of any multiple section course numbered above 100.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A-1</td>
<td>Colloquium</td>
<td>1</td>
<td>Basic study of the visual arts. Offered fall semester.</td>
</tr>
<tr>
<td>1A-2</td>
<td>Colloquium</td>
<td>1</td>
<td>Colloquium of 1A-1. Spring Semester.</td>
</tr>
<tr>
<td>1A-3</td>
<td>Basic Drawing</td>
<td>2</td>
<td>Two-and three-dimensional form and materials.</td>
</tr>
<tr>
<td>1A-4</td>
<td>Basic Design</td>
<td>2</td>
<td>Two-and three-dimensional form and materials.</td>
</tr>
<tr>
<td>1A-5</td>
<td>Advanced Concepts</td>
<td>3</td>
<td>Group and individual projects in two and three-dimensional media.</td>
</tr>
<tr>
<td>1A-6</td>
<td>Elements of Art</td>
<td>2</td>
<td>Elements of form and color.</td>
</tr>
<tr>
<td>1A-7</td>
<td>Principles of Art</td>
<td>2</td>
<td>Principles of form and color.</td>
</tr>
<tr>
<td>1A-8</td>
<td>Elements of Art</td>
<td>2</td>
<td>Elements of form and color.</td>
</tr>
<tr>
<td>1A-9</td>
<td>Principles of Art</td>
<td>2</td>
<td>Principles of form and color.</td>
</tr>
</tbody>
</table>

**1B-1 | Colloquium | 1 | Basic study of the visual arts. Offered fall semester. |
| 1B-2 | Colloquium | 1 | Colloquium of 1B-1. Spring Semester. |
| 1B-3 | Basic Drawing | 2 | Two-and three-dimensional form and materials. |
| 1B-4 | Basic Design | 2 | Two-and three-dimensional form and materials. |
| 1B-5 | Advanced Concepts | 3 | Group and individual projects in two and three-dimensional media. |
| 1B-6 | Elements of Art | 2 | Elements of form and color. |
| 1B-7 | Principles of Art | 2 | Principles of form and color. |
| 1B-8 | Elements of Art | 2 | Elements of form and color. |
| 1B-9 | Principles of Art | 2 | Principles of form and color. |

**1C-1 | Colloquium | 1 | Basic study of the visual arts. Offered fall semester. |
| 1C-2 | Colloquium | 1 | Colloquium of 1C-1. Spring Semester. |
| 1C-3 | Basic Drawing | 2 | Two-and three-dimensional form and materials. |
| 1C-4 | Basic Design | 2 | Two-and three-dimensional form and materials. |
| 1C-5 | Advanced Concepts | 3 | Group and individual projects in two and three-dimensional media. |
| 1C-6 | Elements of Art | 2 | Elements of form and color. |
| 1C-7 | Principles of Art | 2 | Principles of form and color. |
| 1C-8 | Elements of Art | 2 | Elements of form and color. |
| 1C-9 | Principles of Art | 2 | Principles of form and color. |

**1D-1 | Colloquium | 1 | Basic study of the visual arts. Offered fall semester. |
| 1D-2 | Colloquium | 1 | Colloquium of 1D-1. Spring Semester. |
| 1D-3 | Basic Drawing | 2 | Two-and three-dimensional form and materials. |
| 1D-4 | Basic Design | 2 | Two-and three-dimensional form and materials. |
| 1D-5 | Advanced Concepts | 3 | Group and individual projects in two and three-dimensional media. |
| 1D-6 | Elements of Art | 2 | Elements of form and color. |
| 1D-7 | Principles of Art | 2 | Principles of form and color. |
| 1D-8 | Elements of Art | 2 | Elements of form and color. |
| 1D-9 | Principles of Art | 2 | Principles of form and color. |

**Art and Art History**

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1C-1</td>
<td>Colloquium</td>
<td>1</td>
<td>Basic study of the visual arts. Offered fall semester.</td>
</tr>
<tr>
<td>1C-2</td>
<td>Colloquium</td>
<td>1</td>
<td>Colloquium of 1C-1. Spring Semester.</td>
</tr>
<tr>
<td>1C-3</td>
<td>Basic Drawing</td>
<td>2</td>
<td>Two-and three-dimensional form and materials.</td>
</tr>
<tr>
<td>1C-4</td>
<td>Basic Design</td>
<td>2</td>
<td>Two-and three-dimensional form and materials.</td>
</tr>
<tr>
<td>1C-5</td>
<td>Advanced Concepts</td>
<td>3</td>
<td>Group and individual projects in two and three-dimensional media.</td>
</tr>
<tr>
<td>1C-6</td>
<td>Elements of Art</td>
<td>2</td>
<td>Elements of form and color.</td>
</tr>
<tr>
<td>1C-7</td>
<td>Principles of Art</td>
<td>2</td>
<td>Principles of form and color.</td>
</tr>
<tr>
<td>1C-8</td>
<td>Elements of Art</td>
<td>2</td>
<td>Elements of form and color.</td>
</tr>
<tr>
<td>1C-9</td>
<td>Principles of Art</td>
<td>2</td>
<td>Principles of form and color.</td>
</tr>
</tbody>
</table>

**1D-1 | Colloquium | 1 | Basic study of the visual arts. Offered fall semester. |
| 1D-2 | Colloquium | 1 | Colloquium of 1D-1. Spring Semester. |
| 1D-3 | Basic Drawing | 2 | Two-and three-dimensional form and materials. |
| 1D-4 | Basic Design | 2 | Two-and three-dimensional form and materials. |
| 1D-5 | Advanced Concepts | 3 | Group and individual projects in two and three-dimensional media. |
| 1D-6 | Elements of Art | 2 | Elements of form and color. |
| 1D-7 | Principles of Art | 2 | Principles of form and color. |
| 1D-8 | Elements of Art | 2 | Elements of form and color. |
| 1D-9 | Principles of Art | 2 | Principles of form and color. |

**1E-1 | Colloquium | 1 | Basic study of the visual arts. Offered fall semester. |
| 1E-2 | Colloquium | 1 | Colloquium of 1E-1. Spring Semester. |
| 1E-3 | Basic Drawing | 2 | Two-and three-dimensional form and materials. |
| 1E-4 | Basic Design | 2 | Two-and three-dimensional form and materials. |
| 1E-5 | Advanced Concepts | 3 | Group and individual projects in two and three-dimensional media. |
| 1E-6 | Elements of Art | 2 | Elements of form and color. |
| 1E-7 | Principles of Art | 2 | Principles of form and color. |
| 1E-8 | Elements of Art | 2 | Elements of form and color. |
| 1E-9 | Principles of Art | 2 | Principles of form and color. |
Botany

Biological sciences 9-10 s.h.
37:3 Principles of Animal Biology and either 2:1 Introduction to
Therapy or 61:157 General Microbiology

Chemistry 17-20 s.h.
4-1 and 4-4 Principles of Chemistry I & II; 4-6 Elementary
Chemistry Laboratory; 4-121 Organic Chemistry I; and
either 4-122 Organic Chemistry II; 4-134 Physical Chemistry I and
either 4-132 Physical Chemistry II or 99:135 Physical Bio-
chemistry; and 4-141 Intermediate Chemistry Laboratory I

Biochemistry 23-31 s.h.
99:100 Seminar Undergraduate (each semester)
99:120 The Chemistry of Biological Materials 3 s.h.
99:130 Metabolism 3 s.h.
99:131 Molecular Genetics 4 s.h.
99:140 Experimental Biochemistry 4 s.h.
99:155 Senior Research, Independent Study at least 6 s.h.
Advanced biochemistry courses 1-3 s.h.
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 re-
quires:
22M:15 Mathematics for the Biological Sciences 4 s.h.
22M:16 Calculus for the Biological Sciences 3 s.h.
29:1-2 College Physics 8 s.h.
Biological sciences 9-10 s.h.
37:3 Principles of Animal Biology, and either 2:1 Introduction
to Botany or 61:157 General Microbiology

Chemistry 17-20 s.h.
4-1 and 4-4 Principles of Chemistry I & II; 4-6 Elementary
Chemistry Laboratory; 4-121 Organic Chemistry I and 4-120
Physical Chemistry for the Life Sciences

Biochemistry 17-25 s.h.
99:100 Seminar Undergraduate (each semester)
99:120 The Chemistry of Biological Materials 3 s.h.
99:130 Metabolism 3 s.h.
99:131 Molecular Genetics 4 s.h.
99:140 Experimental Biochemistry 4 s.h.
99:190-203 Advanced courses 2-3 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 are advised to include
four semester hours of senior research among their electives (as
well as 4-122 Organic Chemistry II).

Honors Program

Honors may be earned by special work in 99:140, Experimental
Biochemistry, and in research (99:155). In the latter case, work
completed on the problem investigated will be presented to the
Department as a written report and oral presentation in 99:100
Seminar Undergraduate.

Teacher Certification

Biochemistry students planning to qualify for teacher certification
should include 75:100 Introduction to Secondary School Teach-
ing, 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. Hulten
Faculty: professors James L. Below, Robert W. Mario, associate professors Wayne Carter, Robert W. Draper, Stanley L. Davis (emeritus), Robert W.

Degree offered: B.A., M.S., Ph.D.

Botany is a science contributing to our understanding of plants,
their structure, reproduction, function, distribution on the earth,
diversity, evolution, behavior and relation to human affairs. The
Department functions in the preparation of professional botanists
for teaching and research positions. Many students majoring in
botany are preparing to enter careers in fields related to the plant
sciences, such as agriculture, forestry, horticulture, plant breed-
ing, microbiology, and the chemistry of natural products, ecology,
medicine, pharmacy, zoology.

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 20 s.h.
Genetics (2:102, 2:104, 2:160)

Biology of Vascular Plants (2:11, 2:13, 2:15, 2:120, 2:121)
Biology of Non-Vascular Plants (2:103, 2:106, 2:107)
Taxonomy, Ecology and Evolution (2:101, 2:111, 2:112,
2:131)

Two (00-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 Sci-
cences, 22M:20 Elementary Functions or equivalent 3 s.h.

Recommended electives in related fields include: 22M:25 Cal-
culus, 29:1-2 College Physics, 12:3-4 Principles of Physical
Geology and Principles of Historical Geology, 61:157 General
Microbiology, and 99:120 The Chemistry of Biological Materials.
Botany majors are advised to obtain a strong background of
courses in zoology.

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

The Honors Program

An undergraduate program leading to graduation with Honors
provides opportunities for participation in independent research.
projects guided by professional staff members. Prerequisites for admission to the program are senior standing and cumulative grade-point averages of 3.0 overall and 3.5 in botany.

In addition to the regular requirements for the B.A. degree, Honors students must complete three semester hours of research (2:124 Honors in Botany) during the senior year, maintain the grade-point average 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 guidance committee to help set goals for graduate training and to plan the course requirements necessary to achieve them. Candidates for advanced degrees in botany are required to perform some service 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 of morphology, mycology, palaeobotany, physiology, physiology or taxonomy. The master's degree may be earned by completing at least 30 semester hours of graduate study, including six semester hours in 2:225 Research Botany. The preparation of a thesis is optional. Each student must:

Submit a program of study approved by a guidance committee consisting of three members of the graduate faculty, 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 course work 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 requirement.

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

Take a written and oral examination during the term in which he or she is to graduate. These examinations cover 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 program 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 36 hours of graduate study without thesis, or 30 hours with thesis. Nonthesis candidates must take 4 or 5 semester hours of research, and thesis candidates must take 6 or 7 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 in Zoology. In addition, each student must:

Submit, during the first semester in residence or in the program, 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, microbiology, 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 prepares his or her Ph.D. program proposal during the first semester in residence. The student's guidance committee prescribes formal courses or proficiency requirements, taking into account the student's background, educational 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 student is permitted to take the oral and written comprehensive examinations. The comprehensive examinations cover the student's fields of concentration and research.

At least 72 semester hours of graduate credit are required. The doctoral thesis must be submitted before the final examination, which is primarily a defense of the ideas and the methods of obtaining the data.

Graduate Admission

General Requirements
All students should become thoroughly familiar with the requirements of the Graduate College. Applicants for admission should take the Graduate Record Examination and submit scores on the aptitude tests. A sum of scores on the verbal and quantitative sections of the G.R.E. of at least 1,100 is recommended but not an absolute requirement. For those applying for financial aid, a score on the advanced G.R.E. test is desirable. Students applying for admission to the masters degree programs should have a grade-point average on all undergraduate work of at least 2.5. Those with a masters degree and applying for the Ph.D. program should come with a G.P.A. of at least 3.0 on all graduate work taken.

Departmental Requirements
If the entering student has little or no training in botany or biology, some introductory coursework will be required in accordance with the academic needs of the individual. In addition, mathematics at the level of analytic geometry and a year of organic chemistry are usually required of entering students. Courses 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 labora-
tory is available, with associated greenhouses. There is an
excellent department library in the building.

There are many research laboratories 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 specimen
include extensive collections of seed plants and ferns from Iowa
and the Midwest, special research specimens from Mexico and
Central America, and the Conrad collection of htepangla and the
Martin collection of ferns 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
at Iowa Lakeside Laboratory (see "Extension Division") in West
Lake Okoboji in northeastern Iowa allows excellent conditions
for summer study in field biology, limnology, physiology, aquatic
ecology and plant taxonomy. Students frequently participate in
field expeditions in the Canadian Northwest, Mexican and Central
America.

Qualified graduate students may use the University Computer
Center in their research projects.

Courses

Primary for Undergraduates
2101 Introduction to Botany
2 a.h.
Cultural evolution with biology of plant life, structure, function, reproduction and
inheritance in plants. Recommended for students in general science, ecology and
those preparing to teach science. May be continued by 2111 or 213 to satisfy the
natural science core requirements.

3320 Iowa Plants
6 a.h.
Lectures and field study of flowering plants representative of habitats commonly
found in the region; field reproductive biology and identification.

2274 Evolution of Land Plants
3 a.h.
A survey of plant life emphasizing the structure, reproductive biology, ecologic
adaptations and evolutionary relationships of major plant groups. Prerequisite: 2111 or
equivalent.

2132 Biology of the Lower Plant
3 a.h.
Identification, recognition and reproduction of anguinae and gymnosperms of
Midwest emphasized; the ecology of woodland and prairie communities sometimes.
Field work when feasible. Prerequisite: 2111 or equivalent.

2900 Plant Propagation
3 a.h.
Lectures and laboratory relating basic plant biology to the raising and handling of
agricultural plants. Topics covered include seed and vegetative propagation,
cell growth, nutrition, disease control and reproductive processes.

2930 Introductory Genetics
3 a.h.
Basic principles of Mendelian and modern genetics; mechanism of heredity with
examples in plants, animals and humans.

For Undergraduates and Graduates
2100 Plants and Human Affairs
3 a.h.
Study of the ways plants are useful to man as food, for clothing and shelter. The
social economic and ecological significance of plants is considered.

2112 Plant Taxonomy
4 a.h.
Principles of plant taxonomy as illustrated by study of variation within and
between selected families and orders of angiosperms. Prerequisite: 2101 or
equivalent.

2122 General Botany
3 a.h.
Structure, behavior and function of terrestrial marine; introductory botany basics
of populations and communities. Prerequisite: 2111 or 2172 Ecology or equivalent.

2164 Cytogenetics
3 a.h.
Introduction and their use in study of chromosome processes; mechanisms of nucleotides;
chromosome behavior, including translocations, inversions, duplications, deficiencies, distri-
bution and change in the chromosome number of heterozygous and monosomic mutant; controlling elements. Prerequisite: 2102 or 2128.

2165 Physiology
4 a.h.
Structure and function of plant cells, including cytoplasm and plant physiology of representative of major taxonomic groups. Prerequisite: 212 or
equivalent.

2166 Breeding
4 a.h.
Lectures, laboratory and field work dealing with development, structure and evalua-
tion of new varieties and resources. Prerequisite: 212 or equivalent.

2187 Mycology
4 a.h.
Mycology, taxonomy and morphology of fungi with study of representative genera.
Prerequisite: 212 or equivalent.

2190 Plant Physiological Ecology
4 a.h.
Experimental study of factors in plant; cell physiology, water relations and
chemical substances. Prerequisite: 212 and organic chemistry.

2191 Plant Physiology
4 a.h.
Experimental study of internal nutrition, metabolism, growth and development of
seed plants. Prerequisite: 212 and organic chemistry.

2211 Plant Ecology
4 a.h.
Adaptations and interactions between organisms and their environments; topics
include communities, succession, climax, climate, history of geology, computer differen-
tiation, breeding systems, and population. Prerequisite: 212 or equivalent; a course in genetics is helpful.

2232 Plant-Animal Interactions
3 a.h.
Ecology and evolution of plant-animal associations, effect of animals, population
levels, on individual plants or communities, response of plants to changes, pollination
ecology. Prerequisite: 2121 or 2112 or consent of instructor.

2251 Plant Anatomy
3 a.h.
Structure and organisation of fundamental tissue systems of plant including
development and differentiation of soft parts comprising these tissues; relationships
between structure and function. Prerequisite: 212 or equivalent.

2254 Structure and Physiology of Plant Cells
6 a.h.
Lectures and laboratory work on plant cells and cellular organelles with emphasis on
the relationship of their structure to their function; behavior of cellular components and
evaluation of morphological evidence obtained by light and electron microscopy.
Prerequisite: 212 or equivalent.

2255 Botanical Microtechnique
3 a.h.
Lectures and practical instruction in preparation of permanent microscopic slides;
methods of staining, mounting and staining plant materials; standard cytoplasmic techniques; necessary for research in various fields of botany. Prerequisite: 212 or equivalent.

2261 Field Biology
3 a.h.
Correlation of vegetation and environmental factors; delineation of plant communities
and their interrelationships; population dynamics and analysis of field data, methods for
describing vegetation in quantitative terms. Prerequisite: 2111 or 2132 or consent of instructor.

2151 Experimental Techniques
3 a.h.
Lectures and laboratory work with plant tissues, optical, spectrophotometric, chromatographic,
and chemical and biophysical methods. Prerequisite: consent of instructor.

2155 Experimental Techniques
3 a.h.
Experimental techniques may be taken as an independent unit; chemical analysis, enzyme
study and measurement of plant physiology and a respirator. Prerequisite: 2111 or equivalent.

2300 Paleobotany
3 a.h.
Imagery and groups of fossil plants; their structure, evolution, phylogeny and geological
distribution. Prerequisite: 2121 or equivalent or consent of instructor. Same as Geology 1217.

2311 Bryology
4 a.h.
Study of the bryophyta, moss, liverworts and hornworts in field and laboratory study of plant
plant-hitting habits, reproduction in aquatics, bryophyta. and terrestrial and aquatic environments.
Prerequisite: a course in geology, biology or botany. Same as Geology 1217.

2315 Honors in Botany
3 a.h.
Both semesters. Prerequisite: under 3.75 and grade point average is 3.0 overall,
and 3.5 in courses.

2109 Developmental Plant Physiology
3 a.h.
The effect of developmental conditions on plant physiology, particularly photoperiodic responses. Prerequisite: 212 or equivalent. 2129 or
Department consent.

2110 Developmental Physiology Laboratory
3 a.h.
Observation and experimentation in relationship with the study of the developmental
and environmental aspects of plant physiology. Complete: 3129.

2129 Plant Vegetative Growth
3 a.h.
Nature and function of vegetative mechanism; physiological, morphological,
developmental, and physiological aspects. Prerequisite: 212 or equivalent; chemistry
through 4122 or Biology 90-120 recommended. Same as Zoology 37-120.

Botany
in such fields as biochemistry, microbiology, pharmacology, physiology, medicinal chemistry, oceanography, geochemistry, and metallurgy.

Chemistry courses in the first two years of the bachelor's program also provide a good background in general and organic chemistry for biological science majors. General science majors should select their chemistry courses from those listed in the B.A. curriculum: Elementary Quantitative Analysis (4:11) and Physical Chemistry for the Life Sciences (4:130) may also be included in the general science curriculum. Core courses 11:25 (offered jointly with the Physics Department) and 11:26 provide an introduction to physical sciences for the non-sciences major.

Students majoring in chemistry must meet the basic skills and core course requirements for a liberal arts degree. Chemistry majors should attempt to complete courses in organic chemistry, integral calculus, and introductory physics prior to their junior year. A special undergraduate adviser is available to help students design 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 demand for B.S. chemists for research, control or process development work is excellent. The B.S. program also provides all of the prerequisites for graduate work in chemistry or biochemistry.

Chemistry Courses
4:1:4 Principles of Chemistry I-II
4:4 Elements Chemistry Laboratory
4:121-122 Organic Chemistry I-II
4:131-132 Analytical Chemistry I-II
4:131-132 Physical Chemistry I-II
4:141-142 Intermediate Chemistry Laboratory I-II
4:143-144 Advanced Chemistry Laboratory I-II
4:175 Advanced Inorganic Chemistry
4:181 Introduction to Senior Research
4:182 Senior Research
4:50 Chemistry Orientation

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
5:11 First-Semester German and 13:12 Second-Semester 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, bakery, 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 wide choice of electives. Students electing this program may qualify for high school teaching; provided the required hours of education are elected. By choosing the proper electives, students planning to enter medicine, dentistry or some other scientific field may meet the entrance requirements for such professions and also obtain the B.A. degree.

Chemistry Courses
4:1:4 Principles of Chemistry I-II
4:4 Elements Chemistry Laboratory
4:121-122 Organic Chemistry I-II
4:131-132 Analytical Chemistry
4:131-132 Physical Chemistry I-II
4:141 Intermediate Chemistry Laboratory I
4:143 Advanced Chemistry Laboratory I
4:50 Chemistry Orientation

Mathematics
Selected courses to include integral calculus. (22M:35-36 Engineering Calculus 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 also recommended).

Foreign Languages
A minimum of four 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.")

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 department 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
Chemistry

4/173 Advanced Physical Chemistry
Entering students will be given the opportunity to take exemption examinations to demonstrate competence in the areas listed above. These exams will be given at the opening of the academic year and will cover material equivalent to that given in the courses listed.

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 may include no more than eight 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 2.7 is required to 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 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 proposal 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.

A final oral 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 Catalog.") Students with undergraduate degrees in chemistry, physics, mathematics or engineering are eligible.

Languages
The Department does not require proficiency in foreign languages as a part of their training for an 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.

Graduate Admission
An applicant for graduate admission should have a bachelor's degree in chemistry with a grade-point average above 3.0. Most of the graduate students are admitted receive financial support, and application forms may be obtained by writing to the Chairman, Department of Chemistry. Most assistantships and other appointment for the following academic year are filled by April 1, but there are occasional openings at the beginning of the second semester.

Facilities
The Department is housed in a five-story building containing two auditoria, ten lecture rooms, 21 graduate 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.

Courses
Primary for Undergraduates
(Students planning to minor in one year of chemistry should take 4/12, 4/14 and 4/16. Students requiring only one year of chemistry may take 4/21, 4/26 and 4/31. Students requiring 6 h. of organic chemistry should take 4/121, 4/122 and 4/141.)

4/1 Principles of Chemistry I
Continuation of 4/1. Prerequisite: 4/1 or 4/7.
3 s.h.

4/16 Elementary Chemistry Laboratory
Instruction in laboratory techniques for students using Principles of Chemistry. Prerequisite: 4/1.
3 s.h.

4/17 General Chemistry I
Introduction to basic concepts of chemistry for students who do not plan to take more than one year of chemistry.
3 s.h.

4/18 General Chemistry II
Introduction to atomic and nuclear chemistry for students who do not plan to take more advanced courses in chemistry.
3 s.h.

4/19 General Chemistry Laboratory
Introduction to laboratory techniques for students taking General Chemistry I. Prerequisite: 4/1.
3 s.h.

4/111 Elementary Quantitative Analysis
Plot principles of quantitative analysis. Two lectures and two laboratory sessions weekly. Prerequisite: 4/1.
4 s.h.

4/166 Chemical Instrumentation
Chemical analysis: methods of study; chemical physiology; fields of chemical analysis; use of mathematical techniques in chemistry on a one-week course basis. One meeting per week as arranged. No prerequisite.
3 s.h.

4/113 Chemistry in Our Lives
Contemporary issues involving chemistry, particularly in the students of science in the development of our way of life. Effective for the general chemistry sequence.
3 s.h.

4/155 Inorganic Synthesis
Prescriptions: A variety of inorganic compounds. Prerequisite: 4/170.
3 s.h.

4/171 Analytical Chemistry I
Principles of modern analytical chemistry with an emphasis on instrumental methods of analysis. Prerequisite or concurrent: 4/130.
3 s.h.

4/112 Analytical Chemistry II
Continuation of 4/111, which is prerequisite.
3 s.h.

4/121 Organic Chemistry I
General principles, structures, properties and uses of typical representatives of aliphatic and aromatic series. Prerequisite: 4/4 or 4/8.
4 s.h.

4/122 Organic Chemistry II
Continuation of 4/121, which is prerequisite.
3 s.h.

4/127 Introduction to Polymer Chemistry
3 s.h.

4/124 Mechanics and kinetics of polymerization reactions, structure, physical properties and properties involved. Prerequisite: 4/122.
3 s.h.

4/130 Physical Chemistry for the Life Sciences
Principles and applications of thermodynamics, transport phenomena, colligative properties and the chromophore, molecular spectroscopy, characterization of large molecules. Prerequisite: 4/122.
3 s.h.

4/131 Physical Chemistry I
Applications of laws of thermodynamics to chemical phenomena. Prerequisites: Physics 29/30, Mathematics 41/53 or 230/53.
3 s.h.

4/132 Physical Chemistry II
Continuation of 4/131, which is prerequisite.
3 s.h.
4/138 Introduction to Symmetry in Quantum Chemistry 3 a.h.
Elementary symmetry arguments applied in quantum chemistry problems. Prerequisite: 4/132.
4/141 Intermediate Chemistry Laboratory I 3 a.h.
Preparation, purification, identification and analysis of chemical compounds, principally organic compounds. Prerequisites: 4/123 and 4/124 or 4/159.
4/142 Intermediate Chemistry Laboratory II 3 a.h.
Continuation of 4/141, which is prerequisite.
4/143 Advanced Chemistry Laboratory I 2–3 a.h.
Physical and analytical measurements. Prerequisites: 4/111 and 4/131.
4/144 Advanced Chemistry Laboratory II 2–3 a.h.
Continuation of 4/143, which is prerequisite.
4/151 Introduction to Senior Research 1 a.h.
Information retrieval from chemical literature and pages, presentation and analysis of chemical research problems. May be repeated once for credit. Prerequisites: junior standing in chemistry.
4/162 Senior Research 1–4 a.h.
May be repeated for credit. Prerequisite: senior standing in chemistry.
4/170 Advanced Inorganic Chemistry 3 a.h.
Advanced topics in inorganic chemistry. Prerequisite: 4/132.
4/171 Advanced Analytical Chemistry 3 a.h.
Discussions of theoretical basis of modern analytical techniques. Prerequisites: 4/112, 4/132.
4/173 Advanced Organic Chemistry 3 a.h.
General organic chemistry for advanced students. Prerequisites: 4/122, 4/142.
4/174 Advanced Physical Chemistry 3 a.h.
Physical chemistry for advanced students. Prerequisite: 4/132.
4/191 Chemical Pedagogy 0–1 a.h.
Technology and practice of presenting chemical principles and principles of self-learning to students. Prerequisite: senior standing.

Primary for Graduates
4/201 Special Topics in Inorganic Chemistry 3 a.h.
Intensive study of specialized area of specialization within field of inorganic chemistry. Topics change annually. May be repeated for credit. Prerequisite: 4/170.
4/202 Coordination Compounds 3 a.h.
Preparative techniques and structures of molecules formed by combinations of donor molecules with acceptor elements. Prerequisite: 4/170.
4/203 Novel Methods In Inorganic Chemistry 3 a.h.
Applications of physical methods to problems in inorganic chemistry, with emphasis on current research. Prerequisite: 4/170.
4/210 Introduction to Analytical Research 3 a.h.
Laboratory techniques for fundamental and applied problems in analytical chemistry. Prerequisite: 4/144.
4/211 Analytical Estimation and Absorption Spectroscopy 3 a.h.
Theory and practice of qualitative and quantitative analysis by means of elemental analysis, spectrophotometry, atomic absorption and emission, polarimetry, differential thermal analysis, and control of mixture solubility, spectroscopy and chemical structure. Prerequisite: 4/170.
4/212 Electrometallurgical Chemistry 3 a.h.
Theory and practice of analytical methods of analysis: potentiometric, polarimetric, polarographic, semimicro titrations, colorimetry, and instrumental techniques. Prerequisite: 4/170.
4/213 Special Topics in Analytical Chemistry 3 a.h.
Topics change annually. May be repeated for credit. Prerequisite: 4/171.
4/221 Introduction to Organic Research 3 a.h.
Synthesis and structure determination of organic compounds; methods and techniques of structure determination. Prerequisites: 4/132, 4/142.
4/222 Interpretation of Spectra 3 a.h.
Interpretation of electronic, vibrational, magnetic resonance, and mass spectra of complex molecules. Prerequisite: 4/123, 4/172.
4/225 Special Topics In Organic Chemistry 3 a.h.
Topics change annually. Prerequisite: 4/172.
4/226 Physical Organic Chemistry 3 a.h.
Fundamentals of physical chemical concepts of molecular structure, spectroscopy, and reaction rates applied in organic compounds. Prerequisites: 4/132 and 4/172.
Applications of basic mechanistic concepts to organic reactions. Prerequisite: 4/224.
4/229 Advanced Organic Preparations 3 a.h.
Deduction of preparation of complex organic compounds. Prerequisite: 4/172.
4/351 Statistical Thermodynamics 3 a.h.
Statistical principles of statistical thermodynamics and elementary chemical kinetics. Prerequisite: 4/132.
4/352 Statistical Thermodynamics 3 a.h.
Advanced topics in statistical thermodynamics. Continuation of 4/231, which is prerequisite.
4/353 Quantum Chemistry 3 a.h.
Quantum mechanics of chemical systems; time-independent and time-dependent perturbation theory; variational theory; Hartree-Fock theory; atomic structure and spectra. Prerequisite: 4/126.
4/354 Quantum Chemistry 3 a.h.
Group theory; molecular orbital and valence bond theory and the molecular orbital procedure; electronic, vibrational, rotational and spin resonance spectroscopy; quantum mechanics; current topics. Continuation of 4/323, which is prerequisite.
4/356 Chemical Kinetics 1–3 a.h.
Chemical kinetic and mechanisms of chemical reactions from a semi-chemical view point. Prerequisite: 4/125 or consent of instructor.
4/362 Physical Chemistry Topics 1–3 a.h.
Specialization of topics, such as non-linear, high-temperature chemistry, or modern topics in an advanced area to which each course is offered, may be repeated for credit. Prerequisite: 4/132.
4/363 Diffraction Analysis 2 a.h.
Theory and methods of diffraction of electrons, neutrons and X-rays by gaseous, liquid and solid structures determination and computational methods. Prerequisite: consent of instructor.

Seminars
The following courses present discussions of latest advances in the various fields of chemistry. Prerequisite: consent of instructor.
4/291 Seminar: Analytical Chemistry 0–1 a.h.
4/293 Seminar: Inorganic Chemistry 0–1 a.h.
4/294 Seminar: Organic Chemistry 0–1 a.h.
4/296 Seminar: Physical Chemistry 0–1 a.h.

Research
4/291 Research: Analytical Chemistry 0–1 a.h.
4/292 Research: Inorganic Chemistry 0–1 a.h.
4/293 Research: Organic Chemistry 0–1 a.h.
4/294 Research: Physical Chemistry 0–1 a.h.

Classics
Department chairman: Roger A. Horwitz
Faculty: professors Margaret A. Alexander, Janaek A. Oldemier, Roger A. Horwitz; professor emeritus Osei E. Nyarko; associate professors Avivi C. Bush, Ebling E. Hahn, Donald P. Newton; associate professor Alcoma R. Hanno; associate professor M.C. Fliglak.
Degrees offered: B.A., M.A., Ph.D.

In its 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 site of the Classics Department is to understand and interpret the contribution of the ancient world to life in the present and the future.

Undergraduate Program
A training in classics is primarily humanistic, for it concentrates upon the aspects of human achievement which are the foundation of civilization. An undergraduate degree in classics gives a solid foundation for low, 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. 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- and fourth-year Greek, " Homer and Hesiod," and fourth-year Greek, " Greece and Persia," and " Fifth Century Athens." A student majoring in Greek studies knowing not only how to read the Greek language, but also knowing some of the major works of Greek literature, and some
thing of the history of ancient Greece and the Near East of the
seventh through the fifteenth 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 133 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 (6 semester hours) and three hours of composition. The classics major
language, 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 depart-
ments of Classics, History, and Religion)

The major concentrates on the ancient civilization of the Med-
iterranean 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 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 History 6 s.h.
- Ancient philosophy or religion 6 s.h.

Core Requirements
Undergraduates who major in Greek, Latin, classics or ancient civilization are assigned from four semester hours of the literature core requirement for the College of Liberal Arts, but must complete
11:1. The Interpretation of Literature. Ancient civilization major' core requirements in the historical-cultural sequence are limited to four semester hours.

Honors
For exceptional seniors who attained a 3.5 grade average in their first three years of classics courses, two courses are offered in honor reading, one each semester of the senior year, for three 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 general requirements of the Graduate College, including the comprehensive examinations, see "Graduate College." Graduate students in classics may include in their program no more than six semester hours of courses numbered 101-160 and six semester hours of courses numbered 161-199, for a total of six credit hours from courses numbered 101-199.

M.A. in Greek, Latin or Classics
A minimum of 30 semester hours of courses numbered 101 and above is required. Candidates in Latin whom have had no Greek are normally expected to include at least elementary Greek in their programs. In addition, the course 14:201 Preparation: Introduction to Advanced Study (three semester hours is required). Special programs will be arranged for candidates who wish to prepare for teaching 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 faculty and his or her advisor approved by the Department; a tested reading knowledge of German and French; passing written comprehensive examinations on ancient history, on Greek and Latin literature, and on a special field of study, together with a one-hour general oral examination; and writing and defending a dissertation embodying original research or interpre-
tation of a classical subject.

Required courses are:
- A one-year course in Greek readings: 14:204-205 6 s.h.
- A one-year course in Latin readings: 20:204-205 6 s.h.
- Advanced Greek composition (may be satisfied by examination) 3 s.h.
Advanced Latin composition (may be satisfied by examination) 3 a.h.
A three-hour course in ancient art above the 200 level 3 a.h.
A three-hour course in classical linguistics or Sanskrit: 20-205 3 a.h.
A three-hour course in paleography 3 a.h.
A one-year Greek seminar 6 a.h.
A one-year Latin seminar 6 a.h.
A three-hour prosopography 3 a.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, Pyrgi, and Hierakonpolis.

The University is a sponsoring 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 graduate students.

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

Courses

Greek

For Undergraduates Only

Students wishing to satisfy the B.A. foreign language requirement by studying Greek should take 14:1-2 and 14:11-12.

14:1 Elementary Greek 4 a.h.
Prerequisites: Intro. to Greek and text concepts of Greek civilization.

14:2 Elementary Greek 4 a.h.
Continuation of 14:1; selection from Greek authors as read.

14:6 New Testament in Greek 3 a.h.
Rapid reading of readings from the Gospels. May be taken with or after 14:2.

14:11 Second-Year Greek 3 a.h.
Reading of selected texts of Greek prose and poetry. Prerequisites: 14:2 or equivalent.

14:12 Second-Year Greek 3 a.h.
Continuation of 14:11, which is a prerequisite.

For Undergraduates and Graduate Students

14:121 Homer and Heiodotus I 3 a.h.
For third-year Greek students; selections from Homer’s Iliad and Odyssey and from Hesiod’s Works and Days and Theogony read in Greek; complete works read in English.

14:122 Homer and Heiodotus II 3 a.h.
Continuation of 14:12, which is a prerequisite.

14:183 Green and Ptolemaic 3 a.h.
For students in the fourth year of Greek; emphasis leading to the Persian war, career of the war, and its Greco-Persian aftermath; Metrical Poesis and selections from Hesiod’s works read in Greek; supplementary readings in English.

14:186 Fifth-Century Athens 3 a.h.
Changing intellectual climate of late fifth-century Athens and "legends of Athenian democracy; selections from Thucydides, Sophocles’ Oedipus, Plutarchus, Festus’ Supple-
Latin

For Undergraduates Only

Students must elect 30.1 and 30.2, or 20.15 as part of their language requirements for the B.A. or B.S. degree. Students with four years of high school Latin should consult in 30.15. Students who have completed either 20.15 or 20.41 should not enroll in 20.16.

20.16 Elementary Latin

4 a.

Introductionary study of Latin morphology and syntax; readings in Latin.

20.18 Elementary Latin

4 a.

Continuation of 20.16.

20.19 Latin Prose

4 a.

For students who have begun high school Latin, for general review. Not open to students who have passed 20.16 or 20.15.

20.22 Intermediate Latin 1

3 a.

Reading of Latin prose and poetry. Prerequisite: 20.2 or 20.15, or two years of high school Latin.

20.23 Intermediate Latin 2

3 a.

Prerequisite: 20.16 or equivalent.

20.33 Ages of Augustus

3 a.

Culled and translated into English, readings in Latin about or under the Augustan period. Prerequisite: 20.22 or equivalent.

Latin literature in the Roman Republic, readings in Latin of selected authors such as Cicero, Sallust and Catullus, supplementary readings in English. Prerequisite: 20.33 or equivalent.

20.35 Ages of Augustus

3 a.

Selections from the Augustan era, readings in Latin of Sallust, Horace, Vergil, and Ovid, supplemented by supplementary readings in English. Prerequisite: 20.33 or equivalent.

For Undergraduates and Graduates

20.17 Latin Prose Review

2 a.

Review of elements of Latin. May not be taken in students who have completed 20.16, 20.22, 20.23, or 20.33. Offered only in summer term.

20.19 Methods of Foreign Language

3 a.

Aims, subject matter, methods and methods in prospective school teaching. Same as Education 70.15, French 9.08, German 12.10, Spanish 20.10.

20.24 Latin Literature

3 a.

20.26 Cicero

3 a.

Cicero's Commentaries on the Gallic Wars and Civil War, emphasizing his attitude toward Caesar and Rome and his concepts of Rome as a great state.

20.28 Latin Prose Review

2 a.

Reading and criticism of selected Latin prose from Caesars, Horace, Vergil, and Latin prose. Prerequisite: 20.27 or equivalent.

20.31 Vergil's Arcadia

3 a.

Critical study of Vergil's Arcadia.

20.34 Greek

3 a.

20.36 Select Readings in Latin Prose

2 a.

A selection of readings in the Latin prose of Ancient Rome; their place in Roman literature and in Latin prose.

20.38 Twain

2 a.

Reading and analysis of the works of Twain in Latin.

20.39 Latin Prose

3 a.

20.71 Elementary Latin Composition

3 a.

Latin sentence structure and composition of Latin essays.

Latin literature structure and composition of Latin essays.

20.172 Advanced Latin Composition

3 a.

Practice in writing extended Latin prose, with special emphasis on Cicero and Caesar as models.

20.176 Roman Poetry

2 a.

20.177 Roman Rhetoric

2 a.

Reading from prose and poetry of Roman authors, concentrating on the oratorical elements in Cicero and Quintilian.

20.186 Medieval Latin

3 a.

Reading in authors chosen for course and as representing important types of medieval Latin. May be repeated.

20.188 Medieval Greek

3 a.

Literary and historical study of authors from Greek 60 through 70 A.D., as seen in Tacitus' Histories and Annals, Suetonius, Dio, Eusebius, and others. Same as History 161.10.

20.191 Honors Reading

2 a.

Selected prose or special author or topic leading to several short essays.

20.192 Honors Reading

2 a.

Continuation of 20.191, long paper required.

20.193 Greek Prose Tutorial

1-2 a.

Limited to junior major who has completed four years of Latins or equivalent.

20.195 Greek Prose Assignment

1-2 a.

Supervised reading on special author or topic leading to several short essays.

Latin

For Undergraduates Only

Students must elect 30.1 and 30.2, or 20.15 as part of their language requirements for the B.A. or B.S. degree. Students with four years of high school Latin should consult in 30.15. Students who have completed either 20.15 or 20.41 should not enroll in 20.16.

20.16 Elementary Latin

4 a.

Introductionary study of Latin morphology and syntax; readings in Latin.

20.18 Elementary Latin

4 a.

Continuation of 20.16.

20.19 Latin Prose

4 a.

For students who have been in high school Latin, for general review. Not open to students who have passed 20.16 or 20.15.

20.22 Intermediate Latin 1

3 a.

Reading of Latin prose and poetry. Prerequisite: 20.2 or 20.15, or two years of high school Latin.

20.23 Intermediate Latin 2

3 a.

Prerequisite: 20.16 or equivalent.

20.33 Ages of Augustus

3 a.

Culled and translated into English, readings in Latin about or under the Augustan period. Prerequisite: 20.22 or equivalent.

Latin literature in the Roman Republic, readings in Latin of selected authors such as Cicero, Sallust and Catullus, supplementary readings in English. Prerequisite: 20.33 or equivalent.

20.35 Ages of Augustus

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Selections from the Augustan era, readings in Latin of Sallust, Horace, Vergil, and Ovid, supplemented by supplementary readings in English. Prerequisite: 20.33 or equivalent.

For Undergraduates and Graduates

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20.24 Latin Literature

3 a.

20.26 Cicero

3 a.

Cicero's Commentaries on the Gallic Wars and Civil War, emphasizing his attitude toward Caesar and Rome and his concepts of Rome as a great state.

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Reading and criticism of selected Latin prose from Caesars, Horace, Vergil, and Latin prose. Prerequisite: 20.27 or equivalent.

20.31 Vergil's Arcadia

3 a.

Critical study of Vergil's Arcadia.

20.34 Greek

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20.36 Select Readings in Latin Prose

2 a.

A selection of readings in the Latin prose of Ancient Rome; their place in Roman literature and in Latin prose.

20.38 Twain

2 a.

Reading and analysis of the works of Twain in Latin.

20.39 Latin Prose

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20.71 Elementary Latin Composition

3 a.

Latin sentence structure and composition of Latin essays.

Latin literature structure and composition of Latin essays.

20.172 Advanced Latin Composition

3 a.

Practice in writing extended Latin prose, with special emphasis on Cicero and Caesar as models.

20.176 Roman Poetry

2 a.

20.177 Roman Rhetoric

2 a.

Reading from prose and poetry of Roman authors, concentrating on the oratorical elements in Cicero and Quintilian.

20.186 Medieval Latin

3 a.

Reading in authors chosen for course and as representing important types of medieval Latin. May be repeated.

20.188 Medieval Greek

3 a.

Literary and historical study of authors from Greek 60 through 70 A.D., as seen in Tacitus' Histories and Annals, Suetonius, Dio, Eusebius, and others. Same as History 161.10.

20.191 Honors Reading

2 a.

Selected prose or special author or topic leading to several short essays.

20.192 Honors Reading

2 a.

Continuation of 20.191, long paper required.

20.193 Greek Prose Tutorial

1-2 a.

Limited to junior major who has completed four years of Latins or equivalent.

20.195 Greek Prose Assignment

1-2 a.

Supervised reading on special author or topic leading to several short essays.
Communication Studies

Program chairman: John Wolfe Brown
Faculty: professors John Wolfe Brown (Speech), Weiss R.E. Hardy (Journalism), Robert S. Wachter (Linguistics), associate professor James J. Stage (Speech); assistant professors Lacy Kinney (Journalism), Larry Martin (Linguistics)
Degree offered: B.A.

In Communication Studies, the phenomenon of primary interest is instrumental symbolic behavior. Important questions include: How do we learn to use symbols? How does symbol usage differ among cultures and subcultures? How are linguistic and nonlinguistic symbols expressed in various media? What are the effects of linguistic and nonlinguistic symbols on attitudes and behavior? What evaluative criteria are appropriate for various classes of symbol-using behavior?

Diverse methods are appropriate for the study of communication. The scientific approach includes hypothesis generation, theory building, measurement, and other standard features of social science. Communication also can be studied with the critical and speculative tools of history and philosophy.

The undergraduate program requires a minimum of 27 semester hours to be planned in consultation with an advisor so as to emphasize multidisciplinary approaches to communication. Four courses are required for all majors:

122-090 Communication and Contemporary Culture 3 s.h.
Same as Speech and Dramatic Art 114-410, Survey of Literature 108:50.
Spring semester.

122-099 Junior Seminar 1-3 s.h.
Synthesis of various methods in a common project. Spring semester.

122-100 Communication and Communication Systems 3 s.h.
Same as Introduction to Linguistics 114:100.

122-101 Introduction to Linguistics 3 s.h.
Same as Linguistics 114:100, English 114:100.

Comparative Literature

Program chairman: Gevay Spirak
Faculty: professors Barlowe Desideri, Paul Harari, P. Hentzi-Benarai, Gevay Spirak; associate professors B. Z. Kool, Alan F. Nagel
Degree offered: M.A., Ph.D.

Faculty assistant in the Program: In addition to be own local, the Program is Comparative Literature, Law, and other departments, including Classics, East Asian Languages and Literatures, English, Film, French and Italian, German and Hebrew, and Sociology.

The purpose of the Comparative Literature Program is to present literature as an interdisciplinary and international study and to provide a basis for intensive work in literature, literary theory and criticism, and critical methods. Undergraduates interested in comparative studies are encouraged to investigate the major in letters, which is closely coordinated with comparative literature.

Master of Arts Degree

The degree of Master of Arts in comparative literature requires 36 semester hours of study in literature in an international context, with courses both for two or more national literatures and for the theory and general study of literature as a single phenomenon.

The student in consultation with faculty advisors chooses courses in the program and in the individual departments to design a coherent course of study.

Formal degree requirements may be satisfied by a written examination on reading lists agreed upon by student and advisor, or by a written thesis and oral examination on the thesis and its relation to problems and issues in comparative literature.
M.A. may also be awarded after 45 semester hours of graduate study with a grade-point average of 3.52 and successful completion of the qualifying examination for the Ph.D.

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 concentrations of these areas are selected by the student in consultation with appropriate faculty members.

Some typical critical and comparative areas are:

- European Renaissance
- Romanicism
- Structuralism and post-Structuralism
- Narrative theory
- Symbolist poetics and modern literature
- Post-Kantian 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, provided by a critical introduction, may be acceptable 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.

Courses

Upper Division

48:104 European Literature of the 19th Century
3 s.h.

48:107 Romanicism and Joyce around 1900
3 s.h.

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

48:115 Literary Genres in European Literature II
3 s.h.

48:116 Contemporary Scene in Poetry
3 s.h.

48:117 Greek and Roman Literature
3 s.h.

48:119 Modern Poetry
3 s.h.

48:120 Comparative Scene in Fiction
3 s.h.

48:121 Comparative Poetry
3 s.h.

48:122 Comparative Poetry
3 s.h.

48:123 Literature and Philosophy
3 s.h.

48:124 Literature and Society
3 s.h.

48:125 History of Criticism: Plato to the Renaissance
3 s.h.

48:126 History of Criticism: Plato to the Renaissance
3 s.h.

48:127 Roman Satires
3 s.h.

48:128 Roman Satires
3 s.h.

48:129 Roman Satires
3 s.h.

48:130 Roman Satires
3 s.h.

48:131 Roman Satires
3 s.h.

48:132 Roman Satires
3 s.h.

48:133 Roman Satires
3 s.h.

48:134 Roman Satires
3 s.h.

48:135 Roman Satires
3 s.h.

48:136 Roman Satires
3 s.h.

48:137 Roman Satires
3 s.h.

48:138 Roman Satires
3 s.h.

48:139 Roman Satires
3 s.h.

48:140 Roman Satires
3 s.h.

48:141 Roman Satires
3 s.h.

48:142 Roman Satires
3 s.h.

48:143 Roman Satires
3 s.h.

48:144 Roman Satires
3 s.h.

48:145 Roman Satires
3 s.h.
Department. Those with the required competence select their 36 hours from among advanced courses in language and culture, or from the basic language courses offered in another language (i.e., students competent in Chinese may begin Japanese or Sanskrit). 8 credits for work done at other institutions may be applied to the 36 semester hours required of majors.

Program in Asian Studies
Central to the major in the Program in Asian Studies are three two-semester courses encompassing the history, philosophy and literature of India, China and Japan.

The major comprises:

- 39:19-20 Asian Humanities 8 s.h.
- 39:55-56 Civilizations of Asia 8 s.h.
- 39:101-102 Elementary Chinese and
  39:103-104 Second Year Chinese 12 s.h.
- 39:101-102 Elementary Japanese and
  39:103-104 Second Year Japanese 12 s.h.
- Four semesters of Sanskrit 16 s.h.
- 39:193-194 Modern Asia Seminar 6 s.h.

Additional courses relating to Asia (may include courses offered by such departments as Anthropology, Art, Comparative Literature, Geography, History, Political Science and Religion.)

Honors Program
Students who maintain a 3.0 G.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 39:191-192 Honors Tutorial, and write a undergraduate thesis while registered in 39:192 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 doctorate, 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.

Before graduation, the student is given a written and spoken language examination at a level of competence equal to that attained at the end of a fourth-year modern Chinese course and at the end of one year of a classical Chinese course for students of Chinese civilization. At the end of 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 two of these areas:

- Chinese Linguistics
- Chinese Literature
- Chinese Philosophy
- Chinese Anthropology
- Chinese Art
- Japanese Art
- Japanese Literature
- Japanese Anthropology
- Japanese Politics
- Asian Religions

The Department can accommodate native speakers of Chinese or Japanese who wish to work toward professional competence in Asian civilization. A curriculum for such a student would exclude any language work, and would include 26 semester hours of content courses on China, 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 3.25 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 a graduation thesis—to the Department of East Asian Languages and Literature. All applications for graduate awards for the following academic year are due March 13. Applications for admission without support will be accepted until July 15 for the fall semester or 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 includes approximately 38,000 books, periodicals and microforms. 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. The Library regularly acquires publications from India in Pali, Sanskrit and English.

Courses

For Undergraduates
39:6 Asian Civilizations: China 3 s.h.

Handbook and essential study of Chinese civilization, considering background, founda-
tions, history, characteristics. Slides, related tapes and demonstrations of artistic works.
Economics


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

Economics seeks to develop an understanding of how complex economic systems work, along with providing insights into the economics analysis that can be applied to a wide range of economic problems. Study of economics is desirable simply from the standpoint of having 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, regulation, and analysis. Economists are 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 College 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 field of accounting, finance, marketing, business law and management.

The B.B.A. program has more quantitative courses 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.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

225:25 Elementary Probability and Statistics 3 s.h.
225:7 and
225:8 Quantitative Methods I and II 8 s.h.

Courses in Economics

20 semester hours of credit in 100-level courses, including:

Economics 101 Microeconomics and 102 Macroeconomics. Most 100-level courses in economics have as prerequisites either 61:1 and 61:2 Principles of Economics, or senior standing. 61:1 and 61:2 satisfy the social science core requirement. Credits gained in 61:100 Price, Employment and Production Theory cannot be counted toward the 20 semester hours of 100-level economics courses required for the B.A. degree.

Program for the B.B.A. 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.B.S. in economics requires these courses and electives:

224:25-26 Calculus I-II 8 s.h.
225:12 Probability and Statistics 3 s.h.
61:180 Mathematics for Economists (Module A)

20 semester hours of 100-level economics courses, including:

Economics 103, 104:10 and 104:14 Methods of Quantitative Econometrics. 61:1 and 61:2 satisfy the social science core requirement. Credits earned in 61:100 Price, Employment and Production Theory cannot be counted toward the 20-hour requirement.

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 61:100 before his or her senior year, register for 61:197 Senior Thesis in Economics for three hours of credit both semesters of his or her senior year, complete a senior thesis under direction of an economics faculty member of professorial rank and file (due on the final semester of the program) an examination covering his or her departmental honors work. A student satisfactorily completing the Honors Program receives his or her degree "with Honors.

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.
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 literature and language and the discipline of writing.

The immediate aims of the study of literature are to help students read the literary work in a variety of ways and to aid them in relating the work to other aspects of culture. The major aims 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 intended goal is written expression that is both precise and forceful.

The English major is valuable training for every type of position calling for orderly and clear expression. Students who have majored in English at Iowa are 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 primarily with literature written before 1800. In practice an English major ordinarily takes about 45 semester hours in English; at least 15 hours of coursework in English must be taken in residence.

With their advisors, 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, and 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, playwriting), functional writing (technical, legal, scientific, technical reports, writing for social action) and/or the theory of rhetoric and stylistics. To broaden 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 secondary schools will, of course, have to add appropriate courses in education.

As soon as students decide to undertake a major in English, they should consult with the Director of Undergraduate Study in the English Office, 338 EPH, who will assign them permitters or advisors. In 308 EPH, too, they may obtain a pamphlet on the meaning of an English Major, and other leaflets explaining departmental programs.

The Literature Semesters

Available at Iowa to all undergraduates, the two literature semesters presently offered are English Literature Before 1800, and American and Contemporary Literature. The latter covers American Literature from its beginnings through the present day as well as British Literature Since 1900. Each literature semester 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 works are discussed and compared within and across the conventional historical divisions, the students undertake an intensive discipline in practical criticism. They write a paper a week, practice oral reading and recitation of scenes from plays, and often with parallels, imitations and other exercises as means of increasing their sensitivity to literary style.

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 submission 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

Many undergraduates come to Iowa because of the excellence of its creative writing program. With the consent of his or her advisor, any student may elect the undergraduate course in this program. However, admission to the undergraduate workshops in fiction and poetry (SW: 85-86 Undergraduate Writers Workshop: 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 and no later than the last day of registration.

English and Education

The Department offers a flexible undergraduate program for students 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 remember that they will have to be able to work with details of expression in English. They will probably need advanced training in writing—nonfiction, poetry and fiction are all important—critical or rhetorical or linguistic or all of these. Their literary study should emphasize a range of close reading experiences in different kinds of literature, study the tools for exploring a literary text. Especially, they should remember the importance of a broad educational experience for their own study and a basis for understanding the interests of their students. Finally, they should remember that an undergraduate degree represents minimal training for good teachers, so they should major in a program which will permit graduate study at a later date.

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 advisors in elementary education.

Students who seek certification for secondary teaching in fields other than English may seek minor certification in English. Such certification is particularly appropriate for students majoring in speech or journalism. Such a student must complete 20 semester hours of English including 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 anyone desiring to teach English should have considerably more training in the field.

Sloan Summer Scholarships

Two $1,500 Sloan Scholarships are available to University of Iowa English majors for study at either Oxford, London or Edinburg universities, or the University of Birmingham at Stratford-on-Avon, during the summer following the recipient's junior year. Applications must be submitted to the English Office or to the professor in charge not later than February 25 for the following summer. The application must include the applicant's University of Iowa transcript, letters of recommendation from two members of the English faculty and a statement of the applicant's reasons for wishing to study abroad and of the contributions the applicant expects such study to make to his or her senior year of study at Iowa.

Graduate Programs

Master 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 doctoral degree.

The program requires at least 30 semester hours of graduate credit, at least 24 of which must be earned in residence; one department seminar with a grade of 'B' or better; and performance 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 performing satisfactorily on a master's examination.

Master of Arts with Emphasis in Expository Writing

This program emphasizes the theory, analysis, practice and teaching of expository writing. The plan is designed to teach the needs of students who wish to become teachers or critics of expository writing, students who wish to become professional writers, or students who have no specific career objectives but still wish to improve their writing skills and to pursue a course of study that will help them to understand the nature and practice of expository writing. To qualify for the M.A. with emphasis in expository writing, a student must complete 30 semester hours of graduate work with a grade-point average no lower than 3.00. At least 24 of these hours must be earned in residence, including 9 hours of work in advanced composition at Iowa with a grade of 'B' or 'A'.

In conjunction with an advisor, the student must plan a coherent program of study to be completed before the degree is awarded. The plan must be approved by an advisory committee which will ensure that the specifications of the program in expository writing are manifest in each student's program.
Finally, the student must submit to his or her committee a proposal for a thesis, which will be an extended piece of expository writing; must pass an oral examination in defense of the proposal; and must receive the committee's approval of the completed project. Work on the thesis may not be counted toward the required 30 hours of graduate work. Students interested in this program should consult the Director of Advanced Writing.

Master of 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 includes five hours in linguistics, 15 in literature, six in advanced writing and 24 in professional courses taught by specialists in English and in education. Each student spends one semester teaching in a community college, such as Miami Dade, Forest Park (St. Louis), Kirkwood (Cedar Rapids) or Marquette.

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 translating, poetry, fiction or plays. The requirements are flexible, but usually include 48 semester hours of graduate credit, earned chiefly in the Writers Workshop, a book-length collection of poems or short stories, a novel, a play, a major translation project or a work of creative writing in some other appropriate form: and satisfactory performance on an examination on modern literature in the form the student is employing.

Master of Fine Arts with Emphasis in Translation
This alternative to the MFA in Creative Writing emphasizes the discipline of translation, viewed as a distinct literary genre. Students programs are individually structured, and are designed to develop skills in source and target languages and cultures. The course work aims to develop awareness of the tradition of translation and the history of translation theory. The program normally requires 48 semester hours of graduate credit, including a minimum of 12 hours of Translation Workshop, a collection of theoretical poetry, fiction, or drama, and an examination in practical criticism involving problems of translation.

Doctor of Philosophy
Since most doctoral graduates enter college and university teaching, the Department expects 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, concentrations are possible in areas of literary history, literary criticism, 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 languages and their literatures; distribution coursework depending upon needs in historical areas, criticism and linguistics; three seminars in part-written, part-oral comprehensive examinations in three areas, two of which are usually historical periods of English and American literature; a dissertation which may be either a scholarly work or a piece of imaginative writing; and a final examination in defense of the dissertation. All doctoral candidates are required to gain teaching experience, preferably in the Rhetoric and Literature Core programs of the College of Liberal Arts. Interested students should write to the Director of Financial Aids and Doctoral Admissions in English for more detailed explanations.

Financial Aid
Aid is available to graduate students in the forms of scholarships, fellowships, and research and teaching assistantships. It is awarded on a competitive basis to the best qualified applicants, without regard to need, race, sex, or other non-qualifying criteria. Since sources are limited, normally fewer than half the applicants for aid receive it. New students are at some disadvantage, and should expect to support themselves through the first year. Applicants are considered only from students who have been admitted to the Graduate College. Applications and all necessary supporting material must be submitted by February 15 for the following fall semester. Forms are available from the Department and the University Office of Admissions.

Admission
All a graduate program in admission English must meet the general requirements for admission to the Graduate College, and must submit at least two letters of recommendation to the admission. In addition, M.F.A. students should submit samples of their poetry or fiction to the director of the Creative Writing Program, and Ph.D. candidates should submit a representative sample of their writing—a course paper, seminar paper or thesis chapter—the department's associate-director of graduate study.

Writing Programs
For the past fifty years, Iowa has exercised strong national leadership in virtually all areas of the teaching of writing. It was the first institution in 1922 to accept creative dissertations for advanced degree programs. Founded in 1936, the Writers Workshop was a pioneer venture in the field of creative writing and multitudes of distinguished poets and novelists among its alumni. The Workshop provides opportunities for students at all levels to work with outstanding teacher-authors, and also brings numerous prominent authors to campus each year for lectures and readings. The International Writing Program, founded in 1966, brings visiting foreign writers to campus each year, and has added a unique dimension to the opportunities available to students in the area. Iowa has also been a leader in the area of expository writing at the rhetorical theory, and is one of the few academic institutions in the nation which offers a full range of graduate coursework in this area. Beginning in the fall of 1976, Iowa will offer a new degree alternative in the writing area: the M.A. with a concentration in expository writing, and the M.T.A. with a concentration in translation.

Special Facilities
The University Library is large and comprehensive. Strong in all areas of English and American literature, it is extensively noteworthy for its collection of American periodicals and in holdings 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 June Review, the Philological Quarterly and the Windover Press; and in proctoring the Curt Zimansky Me-
memorial Reading Room. They are welcome to participate in such activ-
ties as the English Graduate Student Society, the Humanities Society, the Friends of Old Time Music and the Midwest Modern Language Association. Visiting writers and lecturers are on the
schedule almost every week, and occasional conferences and liter-
y "festivals" enrich the routine of classroom.

Courses

For Undergraduates

Lecture courses for all undergraduates who have satisfied the requisite requirements:

8:1 Modern Fiction 3-4 a.h.
8:2 Modern Poetry 3-4 a.h.
8:3 Modern Drama 3-4 a.h.
Same as Speech and Dramatic Art 497:1.
8:8 Critical and Biblical Literature 3-4 a.h.
8:8 Shakespeare 3-4 a.h.
Same as Speech and Dramatic Art 497:9.

Introductory Courses in Close Reading of Texts

Limited-enrollment discussion courses in which a small number of students are
encouraged to illustrate representative problems in interpreting and evaluating literature:

8:20 Critical Approaches to Literary Works 3 a.h.
8:51 Selected Poems 3 a.h.
8:52 Selected Plays 3 a.h.
Same as Speech and Dramatic Art 497:2.
8:54 SelectedFilms 3 a.h.
Same as Speech and Dramatic Art 508:54.
8:55 Selected Essays 3 a.h.
8:58 American Literary Classics 3 a.h.
8:90 Selected Works of the Middle Ages 3 a.h.
8:91 Selected Works of the Renaissance 3 a.h.
8:92 Selected Works of the 16th Century 3 a.h.
8:93 Selected Works of the 17th Century 3 a.h.
8:94 Selected American Works Before 1800 3 a.h.
8:95 Selected British and American Works 3 a.h.
8:96 Selected Works of the 20th Century 3 a.h.

Major Authors Courses

Limited-enrollment discussion courses. Each week is represented by several major
works. Combinations of authors are changed regularly. By permission of the
instructor, a student may repeat a regular course for some course number If authors have
been changed.

8:71 Chaucer 3 a.h.
8:72 Shakespeare 3 a.h.
Same as Speech and Dramatic Art 497:13.
8:73 Selected English Authors 3 a.h.
8:74 Selected American Authors 3 a.h.
8:75 Selected English and American Authors 3 a.h.
8:76 Selected Modern Authors 3 a.h.
8:77 Specified Authors 3-5 a.h.

Literature Seminar Courses

Limited-enrollment, team-taught discussion courses emphasizing the reading of
whole works or specific departmental areas of emphasis. Literature Seminar 1
(90-92) satisfies requirements of the major for literature before 1800. Students
should have taken at least one college-level literature course before registering
for either of these courses. Prerequisite is required.

8:00-93 English Literature Before 1800 12 a.h.
8:04-07 American and Contemporary Literature 12 a.h.

Hones Courses

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

8:96 Honors Proseminar 3 a.h.
8:98 Honors Proseminar 3 a.h.

For Undergraduate and Graduate Students

Literature and Culture Courses

Primarily for undergraduates and beginning graduate students, these lecture courses
are designed to exhibit major works and authors within the context of the social,
political, cultural and religious movements of their time; primary history is the best
medium for understanding the function of the work in the context of the era. Students who
have satisfied background in history and primary sources are required. Undergraduate
majors in English are urged to include at least one course of this type in the senior
half of their majors:

8:100 Introduction to Critical Procedures 3 a.h.
8:110 Literature and Culture of the Middle Ages 3-5 a.h.
8:120 Literature and Culture of the Renaissance 3-5 a.h.
8:130 Literature and Culture of 16th-Century England 3-5 a.h.
8:150 Literature and Culture of 16th-Century Germany 3-5 a.h.
8:160 Literature and Culture of 16th-Century America 3-5 a.h.
8:140 Literature and Culture of 17th-Century England 3-5 a.h.
8:157 Augustan Criticism and Culture 18th Century to Present 3-5 a.h.
Same as American Civilization 45:125.
8:200 American Literature and Civilization 3 a.h.
Same as American Civilization 45:156.
8:255 European Literature of the 19th Century 3 a.h.
Same as Comparative Literature 45:106 and Letters 508:106.
8:110 Selected Authors 3 a.h.
8:111 American Folk Literature 3 a.h.
Same as American Civilization 45:132.
8:113 American Jewish Writers 3 a.h.
8:115 American Indian Literature 3 a.h.
8:114 American Regional Literatures 3 a.h.
8:116 Literature of Iowas 3 a.h.
8:116 Afro-American Literature 3 a.h.
Same as American Civilization 45:116.
8:117 Afro-American Literature II 3 a.h.
8:118 Chicano Literature 3 a.h.
8:119 African Literature 3 a.h.
Same as American Civilization 45:117 and Letters 108:117.
8:130 African Literature 3 a.h.
8:132 African Literature 3 a.h.
8:132 African Literature 3 a.h.
8:141 Literature and Culture of America Before 1800 4 a.h.
8:143 Literature and Culture of America Before 1800 4-8 a.h.
8:146 Literature and Culture of the 17th Century 3-4 a.h.
8:149 European Literature: St. Augustin to Dante 3 a.h.
8:150 Dante and Roman Poetry 3 a.h.
<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>480.130</td>
<td>Shakespeare</td>
<td>3-0-0</td>
</tr>
<tr>
<td>480.143</td>
<td>Selected Dramatists</td>
<td>3-0-0</td>
</tr>
<tr>
<td>480.164</td>
<td>Medieval Drama</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>480.165</td>
<td>Restaging Drama</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>480.166</td>
<td>Shakespeare and Dramatics VIII</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>480.167</td>
<td>English Drama of the 16th Century</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>480.168</td>
<td>Selected Modern Dramatists</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>480.169</td>
<td>American Drama of the 18th Century</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>480.170</td>
<td>Continental Drama 1700 to 1800</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>480.175</td>
<td>Continental Drama 1800-1900</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>480.197</td>
<td>Principles of Drama</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>480.198</td>
<td>Studies in Modern Drama</td>
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</tr>
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</table>

### Fiction

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>580.330</td>
<td>30th Century American Fiction</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.340</td>
<td>The English Novel: Defoe to Austen</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.350</td>
<td>English Novel: Scott to Butler</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.360</td>
<td>American Novel to 1800</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.370</td>
<td>American Short Story</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.380</td>
<td>American Harper and Satire</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.390</td>
<td>The European Novel 1700-1800</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.400</td>
<td>The European Novel 1800 to Present</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.410</td>
<td>Contemporary Scene in Fiction</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.420</td>
<td>Popular Literature</td>
<td>3 a.h.</td>
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<tr>
<td>580.430</td>
<td>The Fiction of the American Novel</td>
<td>2 a.h.</td>
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<tr>
<td>580.440</td>
<td>American Literature of Our Times: Prose</td>
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### Drama

<table>
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<th>Course Number</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>580.130</td>
<td>Shakespeare</td>
<td>3-0-0</td>
</tr>
<tr>
<td>580.143</td>
<td>Selected Dramatists</td>
<td>3-0-0</td>
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<tr>
<td>580.164</td>
<td>Medieval Drama</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.165</td>
<td>Restaging Drama</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.166</td>
<td>Shakespeare and Dramatics VIII</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.167</td>
<td>English Drama of the 16th Century</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.168</td>
<td>Selected Modern Dramatists</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.169</td>
<td>American Drama of the 18th Century</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.170</td>
<td>Continental Drama 1700 to 1800</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.175</td>
<td>Continental Drama 1800-1900</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.197</td>
<td>Principles of Drama</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.198</td>
<td>Studies in Modern Drama</td>
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### Poetry

<table>
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<tr>
<th>Course Number</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>580.120</td>
<td>Chaucer</td>
<td>3-0-0</td>
</tr>
<tr>
<td>580.130</td>
<td>British Poetry</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.140</td>
<td>American Poetry</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.150</td>
<td>American Literature</td>
<td>3 a.h.</td>
</tr>
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</table>

### Non-Fiction

<table>
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<tr>
<th>Course Number</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>580.165</td>
<td>The Tradition of the Essay</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.168</td>
<td>Survey of Non-Fictional Prose</td>
<td>3 a.h.</td>
</tr>
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</table>

### Thematic Studies

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>580.160</td>
<td>Selected Themes in Literary Works</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.161</td>
<td>Women in Literature</td>
<td>3-0-0</td>
</tr>
<tr>
<td>580.165</td>
<td>Literature of Peace and War</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.169</td>
<td>Uses of Utopian Literature</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.166</td>
<td>Concepts of Love in Western Literature</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.167</td>
<td>Changing Concepts of Women in Literature</td>
<td>3 a.h.</td>
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### Interdisciplinary Courses

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>580.162</td>
<td>Literature and Anthropology</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.163</td>
<td>Literature and Sociology</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.170</td>
<td>Poetry and Related Art Forms</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.171</td>
<td>Drama and Related Art Forms</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.175</td>
<td>American Literature</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.176</td>
<td>American Short Story</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.179</td>
<td>Theatrical Drama</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.180</td>
<td>Film Script Analysis</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.178</td>
<td>Literature and the Arts</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.179</td>
<td>Literature and Philosophy</td>
<td>3 a.h.</td>
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<tr>
<td>580.180</td>
<td>Literature and the Arts</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.181</td>
<td>Literature and Science</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.182</td>
<td>Literature and Society</td>
<td>3 a.h.</td>
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<tr>
<td>580.183</td>
<td>Literature and History</td>
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### Printing and Design Courses

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>580.161</td>
<td>Medieval Manuscripts and Handwriting</td>
<td>art.</td>
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### Independent Study Courses

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>580.163</td>
<td>Undergraduate Honors Project</td>
<td>art.</td>
</tr>
<tr>
<td>580.164</td>
<td>Special Projects for Undergraduates</td>
<td>art.</td>
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### For Graduates

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>580.200</td>
<td>Tests and Exams</td>
<td>6 a.h.</td>
</tr>
<tr>
<td>580.201</td>
<td>Critical and Scholarly Approaches to Literature</td>
<td>6 a.h.</td>
</tr>
<tr>
<td>580.202</td>
<td>Literary Interpretations</td>
<td>art.</td>
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### Media and Languages and Literatures

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>580.160</td>
<td>Old English: Beowulf</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.161</td>
<td>Medieval English Language and Literature</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.162</td>
<td>Early Modern English Language and Literature</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>580.163</td>
<td>Middle English Poetry and Prose</td>
<td>3 a.h.</td>
</tr>
</tbody>
</table>
Special Period Studies Courses

- 2:001 Medieval Studies 3 a.h.
- 2:003 Renaissance Studies 3 a.h.
- 2:005 Reformation Studies 3 a.h.
- 2:006 Victorian Studies 3 a.h.
- 2:011 American Studies 3 a.h.
- 2:100 Studies in Black Culture 3 a.h.
- Same as American Civilization 4:212.
- 2:101 Medieval Studies 3 a.h.
- 2:102 Medieval Theories of Poetry and Criticism 3 a.h.

Literary Criticism Courses

- 2:200 Historical Criticism and the Study of Literary Periods 3 a.h.
- Same as Comparative Literature 4:212.
- 2:202 Intellectual Background of Literary Periods 3-3 a.h.
- 2:203 Literary Genre and Modes 3 a.h.
- 2:204 Poetic Theory and Criticism 3 a.h.
- 2:207 Dramatic Theory and Criticism 3 a.h.
- 2:208 Theory and Analysis of Literary Forms 3 a.h.
- 2:209 American Criticism and Culture 3 a.h.
- Same as American Civilization 4:216.

Comparative and European Literature

- 2:201 European Renaissance 3 a.h.
- Same as Comparative Literature 4:212.
- 2:202 Renaissance Literature 3 a.h.
- Same as Comparative Literature 4:212.
- 2:203 Age of Enlightenment 3 a.h.
- Same as Comparative Literature 4:212.
- 2:204 European Romanticism 3 a.h.
- Same as Comparative Literature 4:212.
- 2:205 Modern European Poetry 3 a.h.
- Same as Comparative Literature 4:212.
- 2:208Movements in European Literature 3 a.h.
- Same as Comparative Literature 4:212.
- 2:209 Literary Genre and Modes 3 a.h.
- Same as Comparative Literature 4:212.
- 2:210 Patterns of Myth and Literary Forms 3 a.h.
- Same as Comparative Literature 4:212.
- 2:220 Types of Modern Criticism 3 a.h.
- Same as Comparative Literature 4:212, Special 20-224.

Bibliography

- p.900 Literary Tools and Research methods 3 a.h.

Graduate Seminars

These courses represent the most advanced work in English and American Literature and are restricted to students who have completed the requirements for the Bachelor of Arts degree. Consent of the instructor is required for registration.

- 2:400 Seminar: Medieval Literature 3 a.h.
- Same as Comparative Literature 4:402.
- 2:401 Seminar: Middle English Literature 3 a.h.
- 2:404 Seminar: Chaucer 3 a.h.
- 2:411 Seminar: Shakespeare 3 a.h.
64

English

8414 Seminar: 17th-Century Dramatic Literature 3 a.h.

8414 Seminar: Elizabethan Theatre History 3 a.h.

8416 Seminar: Milton 3 a.h.

8421 Seminar: Neoclassical Prose 3 a.h.

8432 Seminar: Neoclassical Poetry 3 a.h.

8437 Seminar: English Romanticism 3 a.h.

8437 Seminar: Victorian Literature 3 a.h.

8443 Seminar: 19th-Century British Literature 3 a.h.

8453 Seminar: 20th-Century British Literature 3 a.h.

8458 Seminar: 20th-Century British and American Literature 3 a.h.

8459 Seminar: 19th-Century British Poetry 3 a.h.

8461 Seminar: American Colonial Literature 3 a.h.

8463 Seminar: American Transcendentalism 3 a.h.

8465 Seminar: American Romantic Literature of the 19th Century 3 a.h.

8468 Seminar: 19th-Century American Literature 3 a.h.

8467 Seminar: American Realist Literature of the 19th Century 3 a.h.

8469 Seminar: Modern Letters 3 a.h.

Same as Letters 108:493.

8477 Seminar: Social Painting in American Literature 3 a.h.

Same as American Civilization 45:497.

8488 Seminar: American Writers of the 20th Century 3 a.h.

8480 Seminar: Problems in Aesthetics and Literary Theory 3 a.h.

Same as Comparative Literature 40:496.

8481 Seminar: Studies in the History of Criticism 3 a.h.

8482 Seminar: Studies in Literary History 3 a.h.

8483 Seminar: Literary Relations 3 a.h.

Same as Comparative Literature 48:496.

8484 Seminar: Types of Modern Criticism 3 a.h.

Same as American Civilization 45:496.

8485 Seminar: Literature and Other Intellectual Disciplines 3 a.h.

Same as American Civilization 45:496.

8486 Seminar: Analytical Bibliography and Textual Criticism 3 a.h.

Independent Study

Advanced Studies

(Courses for one or several students reading under the guidance of a faculty member)

8590 Advanced Studies in an Author 3 a.h.

8595 Advanced Studies in a Literary Period 3 a.h.

8597 Advanced Studies in a Literary Form 3 a.h.

8598 Advanced Studies in a Literary Genre 3 a.h.

8599 Advanced Studies in a Literary Mode 3 a.h.

8594 Advanced Studies in a Literary Movement 3 a.h.

8600 Advanced Studies in a Literary Theme 3 a.h.

8596 Advanced Studies in Literary Criticism 3 a.h.

8596 Advanced Studies in Rhetoric 3 a.h.

8600 Advanced Studies in an Interdisciplinary Subject 3 a.h.

8900 Special Project for Graduate Students 3 a.h.

Dissertation

8995 Ph.D. Thesis 3 a.h.

Linguistics and Language Courses

8L000 Elements of Linguistics 3 a.h.

Same as Linguistics 102:25.

8L100 Introduction to Linguistics 3 a.h.

8L114 Language Data Processing 3 a.h.

Same as Linguistics 102:114.

8L115 Language Data Programming 3 a.h.

Same as Linguistics 103:115.

8L120 Historical and Comparative Linguistics 3 a.h.

Same as Linguistics 102:120.

8L131 History of the English Language 3 a.h.

Same as Linguistics 102:131.

8L132 Elementary Old English 3 a.h.

Same as Linguistics 102:132.

8L141 The Structure of English 3 a.h.

Same as Linguistics 102:141.

8L142 Modern English Grammar 3 a.h.

Same as Linguistics 102:142.

8L153 Language, Society, and Education 3 a.h.

Same as Linguistics 103:153.

8L154 Historical Backgrounds of Modern English 3 a.h.

8L151 Linguistic Perspectives 3 a.h.

Same as Linguistics 103:151.

8L155 Middle English Language and Literature 3 a.h.

Same as Linguistics 102:155.

8L500 Advanced Studies in Linguistics 3 a.h.

Professional Courses

Although open to all graduate students, the primary purpose of these courses is to offer demonstrated and practical training to those who plan to teach.

8P190 Methods in English 3 a.h.

Same as Education 70:190.

8P190 Methods in English Literature 3 a.h.

Same as Education 70:190.

8P190 Methods in American Literature 3 a.h.

Same as Education 70:190.

8P200 Methods in History of Criticism 3 a.h.

Same as Education 70:200.

8P200 Methods in History of Criticism 3 a.h.

Same as Education 70:200.

8P210 Methods in Cultural Studies 3 a.h.

Same as Education 70:210.

8P210 Methods in Cultural Studies 3 a.h.

Same as Education 70:210.

8P300 Methods in Social Research 3 a.h.

Same as Education 70:300.

8P300 Methods in Social Research 3 a.h.

Same as Education 70:300.

8P300 Colloquium: Teaching Freshman Rhetoric 3 a.h.

Same as Speech and Dramatic Art 60:230.

8P300 Colloquium: Teaching Freshman Composition 3 a.h.

Same as Speech and Dramatic Art 60:230.

8P300 Colloquium: Teaching of Literature in College 3 a.h.

Expository Writing Courses

General Interest Courses

These courses are designed to serve the general interests and needs of undergraduates in all areas of the University. They do not offer practice in various areas of composition and various kinds of alternative, persuasive, and expressive writing.

8W10 Expository Writing 3 a.h.

8W10 Expository Writing 3 a.h.

8W10 Expository Writing 3 a.h.

8W10 Expository Writing 3 a.h.

Special Interest Courses

These courses are designed to serve the special interests and needs of advanced undergraduate and graduate students in particular academic and professional areas of the University. They do not offer practice in specialized forms of writing for specialized purposes and audiences.

8W111 Writing for the Humanities 3 a.h.
Independent Study

French and Italian

Department chairman: John T. Neveuagle, Jr.

Undergraduate Programs

The Department offers a variety of major programs in French and Italian, electives for nonmajors 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 culture of countries of historical and contemporary importance, facilitate the development of proficiency in the language and foster critical appreciation of the civilization and literature of the country.

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 studies, 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 literature, civilization or teaching.

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.
- 9:126 French Conversation: Third Level 2 s.h.
- 9:156 French Conversation: Fourth Level 2 s.h.
- 9:157 Advanced French Pronunciation 2 s.h.
- 9:25 French Pronunciation 2 s.h.

A minimum of four 100-level courses in literature, plus a fifth 100-level course in a choice of literature, advanced language or civilization, totaling 15 semester hours. Requirements for the literature program total 35 semester hours.

Requirements for the civilization program include:

- 9:27-28 Second-Year Composition and Conversation 8 s.h.
- 9:111 Third-Year Composition 3 s.h.
A choice of one among these three courses:
9:112 Third Year Composition 3 s.h.
9:126 French Conversation: Third Level 2 s.h.
9:136 French Conversation: Fourth Level 2 s.h.

A minimum of four 100-level courses in French civilization and three 100-level courses in literature, totaling 21 semester hours.

Requirements for the civilization program total 34-35 semester hours.

Requirements for the teaching major include:
9:27-28 Second-Year Composition and Conversation 8 s.h.
9:111-112 Third-Year Composition 6 s.h.
9:157 Advanced French Pronunciation 2 s.h.
9:126 French Conversation: Third level 2 s.h.
9:136 French Conversation: Fourth level 2 s.h.

A minimum of five 100-level courses of which at least two are in literature and two in civilization totaling 15 semester hours.

Requirements for the teaching major total 35 semester hours. The student in a teaching major must also complete the requirements of the College of Education for certification.

Italian
Requirements for the major in Italian include:
18:11-12 Intermediate Italian 6 s.h.
18:111-112 Advanced Composition and Conversation 8 s.h.
18:105-106 Introduction to Italian Literature 6 s.h.
18:119-120 Dante and His Times 4 s.h.
18:101 Literature of the 19th Century 3 s.h.
18:102 Literature of the 20th Century 3 s.h.
Total 27 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 one-year of college French or the equivalent, but does not require that the student be a French major. Centered in Rouen 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 may earn 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 defense of a thesis, for which the student may earn six hours of credit toward the 30-hour requirement. The program must include 9:157 Advanced French Pronunciation; 9:209 Advanced Grammar and Lexicology; 9:210 Comparative Syntaxics, and at least four graduate level (200 and above) literature courses. Candidates may occasionally take courses in related fields.

Master of Arts Without Thesis
The requirements for the nonthesis program are the same as for the M.A. with thesis, except that in the nonthesis 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 taken in education or related fields and at least nine must be in graduate courses in French literature. These courses are also suggested: 9:153 Stylistics: Analysis and Application, 9:154 Textual Analysis, 9:209 Advanced Grammar and Lexicology, 9:210 Comparative Syntaxics, 9:113-114 French Civilizations, 9:130 Methods, Foreign Language, 9:131 Language Laboratory Procedures, 9:152 Contemporary France, and 9:157 Advanced French Pronunciation. Candidates must pass a final written and oral examination.

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 Introduction to Old French Grammar; proficiency in a foreign language other than French (i.e., four semesters of college study or equivalent); and completion of three graduate courses (minimum of eight semester hours) in a related field, such as another literature, history, philosophy, etc. The choice of second language and field are to be determined by the candidate and advisor in consultation.

Graduate students working toward an advanced degree are required to spend at least one year 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. In addition to the Graduate Record Examination scores required by the Graduate College, the Department requires the GRE Advanced Test in French.

Appointments
Teaching and research assistantships and University fellowships and scholarships are available to qualified graduate students (see "Graduate College"). The Department may deny one Teaching/ Research 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 student one year of residence in France.

French Courses

Primarily for Undergraduates

Students who have had significant experience with French through study or foreign residence are required to take placement tests. A student may not repeat, for either credit or quality points, 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.

91 Elementary French 4 a.h.
92 Elementary French 4 a.h.
Prerequisite: 91 or equivalent.
93 Elementary French Intensive Course 4 a.h.
First-year French as main emphasis.
97 French for Travelers 3 a.h.
Best conversational French for the traveler. Given in Sunday and Evening Class Program.
919 French Literature of Government 4 a.h.
Given entirely in English. Same as Core Literature 11:100; may be taken as part of core literature requirement.
811 Intermediate French 3 a.h.
Recommended for students who plan to enregister their study of French with second year. Prerequisite: 92 or equivalent.
813 Intermediate French 3 a.h.
Continuation of 811. Prerequisite: 91-111 or equivalent.
829 French Pronunciation 2 a.h.
May be taken in conjunction with 921, 929, 9111, 9112.
829 French Conversation: First Year 2 a.h.
May be taken independently or in conjunction with 9111, 9112, 9221, 9229. Prerequisite: 92 or equivalent.
829 Second-Year Conversation 2 a.h.
Recommended for student who desire to continue study of French or who wish to improve both active and direct of the language. Prerequisite: 9229 or equivalent.
829 Second-Year Composition and Conversation 4 a.h.
Comprehensive test of 9221. Prerequisite: 9227 or equivalent.
829 French Conversation Second Level 2 a.h.
Prerequisite: 9228 or equivalent.
891 Ph.D. French I 0 a.h.
For candidates for degrees in other departments who want reading ability for purposes of minor work.
892 Ph.D. French II 0 a.h.
893 Ph.D. French III 0 a.h.
894 Ph.D. French IV 0 a.h.
895 Special Reading Work 0 a.h.
Prerequisite: 92 or equivalent.

For Undergraduates and Graduates

A detailed description of courses offered each semester is available in the department office. All courses are given in French unless otherwise indicated. Courses numbered from 150-199 are intended primarily for advanced undergraduates; a graduate student should consult with his or her advisor before registering for these courses.

8100 Regents' Summer Abroad Program 0-4 a.h.
9000 Introduction to French Literature 17th-18th Centuries 3 a.h.
Prerequisite: 9112, 9228, or equivalent.
9038 Introduction to French Literature 18th Century 3 a.h.
Prerequisites: 9112, 9228, or equivalent.
9037 Thèmes in French Literature 3 a.h.
Prerequisites: 9112, 9228, or equivalent.
9108 Introduction to French Literature 20th Century 3 a.h.
Prerequisite: 9228 or equivalent.
9109 Introduction to French Civilization 4 a.h.
9113 Third Year Composition 3 a.h.
Prerequisite: 9228 or equivalent.
9115 Third Year Composition Continuation of 9111. Prerequisite: 9211 or equivalent.
9116 French Civilization A survey of social history from Middle Ages to 1789. Prerequisite: 9112, 9228, or equivalent.
9114 French Civilization A survey of social history from 1789 to the present. Prerequisite: 9112, 9228, or equivalent.
9121 French Composition 3 a.h.
9129 French Composition: Third Level 3 a.h.
Prerequisite: 9228 or equivalent.
9130 Modern Methods: Foreign Language 3 a.h.
Continually offered as Education 75:116. Same as Spanish 25:130, Latin 25:179,
9131 Language Laboratory Procedures 1-2 a.h.
Same as Spanish 25:131, Education 75:124 and East Asian Languages and Literature 9115.
9139 French Conversation: Fourth Level 3 a.h.
9147 The French Cinema 3 a.h.
Same as Spanish 25:132, Education 75:124 and East Asian Languages and Literature 9112.
9152 Contemporary French 3 a.h.
9152 Stylistics: Analysis and Application 3 a.h.
Students with an emphasis in English structure and thought processes. Exercises and analyses to apply to their reading skills. Prerequisite: 9112 or equivalent.
9164 Textual Analysis 3 a.h.
Study of literary styles through analysis of representative texts. Follows 9153 but may be taken independently.
9157 Advanced French Pronunciation 3 a.h.
Required for seniors. Prerequisite: 9112 or equivalent.
9159 Studies in the Novel 3 a.h.
The French novelistic tradition through selected major texts and critical works.
9161 19th-Century French Novel 3 a.h.
9162 20th-Century French Fiction 3 a.h.
9164 20th-Century French Theater 3 a.h.
9165 Masterpieces of French Literature 3 a.h.
Majors: lines from Middle Ages to 17th century; given in English, readings in French.
Prerequisite: 9112, 9228, or equivalent. Same as Literature 106:153.
9166 Masterpieces of French Literature: Tales of the 18th and 19th centuries; given in English, readings in French.
Prerequisite: 9112, 9228, or equivalent. Same as Literature 106:162.
9168 Narrative and Related Art Forms 3 a.h.
9171 The French Writer and Social Criticism 3 a.h.
Prerequisite: 9112 or equivalent.
9177 Current Issues, Approaches, and Materials in Foreign Language Education 3 a.h.
Same as Education 75:225, Spanish 35:171.
9182 Critical Approaches to French Literature 3 a.h.
Prerequisite: 9112 or equivalent.
9185 Introduction to the French-Speaking World 3 a.h.
Survey of Afrikan and Catholic Belgium, countries with French influence as asylum remnant. Prerequisite: 9112 or equivalent. Same as American Civilization 25:335.
9189 19th-Century French Poetry 3 a.h.
Prerequisite: 9112 or equivalent.
9188 French Civilization Through the Arts 3 a.h.
Prerequisite: 9112 or equivalent.
9186 20th-Century French Poetry 3 a.h.
Prerequisite: 9112 or equivalent.
9187 Aspects of Poetry 3 a.h.
Prerequisite: 9112 or equivalent.
Primary for Undergraduates

For Undergraduates and Graduates

General Science Program

The program in General Science enables preprofessional students who need credit in several science disciplines, as well as students interested in a variety of science disciplines, to complete a degree...
while satisfying preprofessional requirements and/or continuing with courses in multiple science fields. The program provides some depth of preparation while encouraging continual breadth of experiences—a combination attractive for preparation for secondary school teaching, health-related professions including medicine, dentistry, medical technology, optometry, physical therapy, and similar fields, and certain specialized interdisciplinary graduate areas.

Undergraduate Programs

There are three categories of programs leading to the bachelor's degree in General Science, each having differing requirements, as follows:

**General Science (non-teaching and non-health related)**

A student must earn 44 semester hours (48 for the B.S. degree) of credit for courses from any three of the science-mathematics areas in the College of Liberal Arts (Biology, Botany, Chemistry, Mathematical Sciences, Geology, Microbiology, Physics-Astronomy, and Zoology), with at least 20 semester hours in one of these areas.

All students who graduate with a degree in General Science (non-teaching) and are not in a joint degree or professional program listed below must complete one of the following mathematics courses, its equivalent, or a higher level mathematics course at the college level:

- 22S.8 Quantitative Methods II
- 22M.11 Fundamentals of College Mathematics II
- 22M.16 Calculus for the Biological Sciences
- 22M.20 Elementary Functions

Any 22C course except 22C.1

**General Science (Health Related—Joint Programs)**

A student must earn 44 semester hours (48 for the B.S. degree) of credit for courses from any three of the science-mathematics areas in the College of Liberal Arts (Biology, Botany, Chemistry, Mathematical Sciences, Geology, Microbiology, Physics-Astronomy, and Zoology), with at least 20 semester hours in one of these areas.

Students admitted into the College of Dentistry or Medicine prior to obtaining a bachelor's degree, and students admitted into the professional programs in Medical Technology, Nuclear Medicine, or Physical Therapy, may substitute from their first year of professional training 30 semester hours of credit toward the 124 hours needed for graduation including:

- Eight semester hours of science toward the 44 or 48 needed toward the General Science major; and
- Four semester hours of science toward the 20 needed in one area in the major.

Students should consult other appropriate sections of this catalog for further information concerning other features of these professional and preprofessional programs. The description here pertains only to the Liberal Arts requirements for a bachelor's degree in general science, and should not imply anything further concerning specific program requirements in a particular health field.

**General Science (Teaching)**

A student may earn a B.A. or B.S. degree in General Science Teaching by completing one of the approved sequences in Science Teaching which specify 50-54 semester hours. Students majoring in science teaching must also complete the requirements necessary for certification. This includes a 26 semester hour sequence of courses in education. The approved sequences in science teaching include:

**Biology Emphasis**

**Advisor:** John E. Penick

- 2:1 Introduction to Botany 4 s.h.
- 37:3 Principles of Animal Biology 5 s.h.
- Additional electives in botany or zoology, with at least 8 s.h. in botany and 8 s.h. in zoology
  - 41: 4-4 Principles of Chemistry I-II 6 s.h.
  - 4:0 Elementary Chemistry Laboratory 2 s.h.
  - 4:121-122 Organic Chemistry I-II 6 s.h.
  - Chemistry Elective 2 s.h.
- 12:3 Principles of Physical Geology 2 s.h.
- 12:4 Principles of Historical Geology 2 s.h.
- 29:1 College Physics 4 s.h.
- 97:128 Meaning of Science 2 s.h.
- 97:130 Science in Historical Perspective 2 s.h.

**Chemistry Emphasis**

**Advisor:** Norman C. Baerziger, Vincent N. Lunetta

- 4:1 and 4:4 Principles of Chemistry I-II 6 s.h.
- 4:6 Elementary Chemistry Laboratory 2 s.h.
- 4:121-122 Organic Chemistry I-II 6 s.h.
- 4:141 Intermediate Chemistry Lab I 2 s.h.
- 4:11 Elementary Quantitative Analysis 4 s.h.
- 4:131-132 Physical Chemistry I 6 s.h.
- 29:1 College Physics 4 s.h.
- 29:17 Introductory Physics I 4 s.h.
- 29:2 College Physics 4 s.h.
- 29:18 Introductory Physics II 4 s.h.
- 29:19 Introductory Physics III 4 s.h.
- Electives 3 s.h.
- 22M:35-36 Engineering Calculus I-II 8 s.h.
- 22M:25-25 Calculus I-II 8 s.h.
General Science Program

Earth Science Emphasis
Advisors: Keene Swett, Edward L. Pizzini
12:3 Principles of Physical Geology 2 s.h.
12:4 Principles of Historical Geology 2 s.h.
or
12:5 Introduction to Geology 4 s.h.
12:9 Geology of Iowa 2 s.h.
12:41 Mineralogy 4 s.h.
12:121 Principles of Palaeontology 3 s.h.
or
12:162 Regional Stratigraphy 3 s.h.
12:171 Geomorphology 3 s.h.
4:1 and 4:4 Principles of Chemistry I-II 6 s.h.
4:6 Elementary Chemistry Laboratory 2 s.h.
29:0-2 College Physics 8 s.h.
29:61-62 General Astronomy 8 s.h.
44:123 Geography of Natural Resources 3 s.h.
44:101 Introduction to Weather and Climate 3 s.h.
97:128 Meaning of Science 2 s.h.
97:130 Science in Historical Perspective 2 s.h.

Environmental Studies Emphasis
Advisors: John E. Penick
2:1 Introduction to Botany 4 s.h.
2:13 Biology of the Local Flora 4 s.h.
17:3 Principles of Animal Biology 5 s.h.
37:109 Genetics 3 s.h.
37:131 Evolution 4 s.h.
37:132 Ecology 4 s.h.
97:128 Meaning of Science 2 s.h.
97:130 Science in Historical Perspective 2 s.h.
4:1, 4:4 Principles of Chemistry I-II 6 s.h.
4:6 Elementary Chemistry Laboratory 2 s.h.
At least nine semester hours from the following:
12:5 Principles of Physical Geology 2 s.h.
12:3 Introduction to Geology 4 s.h.
12:125 A Planet in Crisis 2 s.h.
12:185 Principles of Mineral Economics 2 s.h.
44:19 Natural Environmental Issues 1 s.h.
44:122 Natural Resources of the United States 3 s.h.
or
44:123 Geography of Natural Resources 3 s.h.
At least eight semester hours from the following:
527:102 Technology of Environmental Pollution Control 3 s.h.
524:154 Environmental Microbiology 3 s.h.
524:254 Environmental Toxicology 2 s.h.
527:103 Environmental Health 3 s.h.

Physics Emphasis
Advisors: George W. Cosman, Edward B. Nelson, Vincent N. Luszn
20:1 College Physics 4 s.h.
or
20:17 Introductory Physics I 4 s.h.
20:2 College Physics 4 s.h.
or
20:18 Introductory Physics II 4 s.h.
20:19 Introductory Physics III 4 s.h.
20:128 Electronics 4 s.h.
22M:35 Engineering Calculus I 4 s.h.
22M:36 Engineering Calculus II 4 s.h.
22C:7 Introduction to Computing with Fortran 3 s.h.
4:1 and 4:4 Principles of Chemistry I-II 6 s.h.
4:6 Elementary Chemistry Laboratory 2 s.h.
4:8 General Chemistry II 3 s.h.
4:9 General Chemistry Laboratory 2 s.h.
4:131 Physical Chemistry I 3 s.h.
97:128 Meaning of Science 2 s.h.
97:130 Science in Historical Perspective 2 s.h.

Minors in Science Teaching
Five teaching minors in science are available for persons with teaching majors in other academic areas. Only the combinations of courses qualify a person for certification in the area specified with each heading.

Biology
2:1 Introduction to Botany 4 s.h.
37:3 Principles of Animal Biology 5 s.h.
97:128 Meaning of Science 2 s.h.
97:130 Science in Historical Perspective 2 s.h.
Electives in Botany and Zoology 8 s.h.
75:151 Methods: Physical Science 2 s.h.
75:152 Methods: Biological Science 2 s.h.

Chemistry
4:1 and 4:4 Principles of Chemistry I-II 6 s.h.
4:6 Introductory Chemistry Laboratory 2 s.h.
97:128 Meaning of Science 2 s.h.
97:130 Science in Historical Perspective 2 s.h.
527:102 Technology of Environmental Pollution Control 3 s.h.
524:154 Environmental Microbiology 3 s.h.
524:254 Environmental Toxicology 2 s.h.
527:103 Environmental Health 3 s.h.

53 s.h.
53 s.h.
53 s.h.
53 s.h.
53 s.h.
53 s.h.
53 s.h.
53 s.h.
Genetics

Physical Science
4:1 and 4:4 Principles of Chemistry I-II 6 s.h.
29:1-2 College Physics 8 s.h.
97:1-28 Meaning of Science 2 s.h.
97:130 Science in Historical Perspective 2 s.h.
Electives in Chemistry or Physics 3 s.h.
75:151 Methods: Physical Science 2 s.h.
75:152 Methods: Biological Science 2 s.h.
25 s.h.

General Science
2:1 Introduction to Botany 4 s.h.
29:61 General Astronomy 4 s.h.
12:3 Principles of Physical Geology 2 s.h.
or
12:4 Principles of Historical Geology 2 s.h.
4:1 Principles of Chemistry I 3 s.h.
29:1 College Physics 4 s.h.
97:1-128 Meaning of Science 2 s.h.
97:1-130 Science in Historical Perspective 2 s.h.
75:1-151 Methods: Physical Science 2 s.h.
75:1-152 Methods: Biological Science 2 s.h.
25 s.h.

Earth Science
12:3 Principles of Physical Geology 2 s.h.
12:4 Principles of Historical Geology 2 s.h.
29:61-62 General Astronomy 8 s.h.
97:1-128 Meaning of Science 2 s.h.
97:1-130 Science in Historical Perspective 2 s.h.
Electives in Geology 5 s.h.
75:1-151 Methods: Physical Science 2 s.h.
75:1-152 Methods: Biological Science 2 s.h.
25 s.h.

Special Rules
Since the General Science Program involves large numbers of students heading for a variety of professional and graduate areas, large numbers of faculty advisors, and several colleges and departments, some special rules and regulations have been approved by the General Science Advisory Committee of the College of Liberal Arts (consisting of the department executive officers of biochemistry, botany, chemistry, geology, physics-astronomy, microbiology and general science). These special rules include:

At least an semester hours of graded credit in science must be earned at The University of Iowa.

Transfer students using any of the joint programs must complete their last 30 semester hours in residence at the College of Liberal Arts at The University of Iowa in order to be eligible for the B.A. or B.S. degree one year later.

General Science majors should meet their language requirement with German, French, or Russian. An academic advisor may approve the use of another language if there are circumstances making such a choice desirable. Letters approving other languages are filed with the student's records in the Registrar's Office.

No "1" numbered science core courses or credit from the CLEP Natural Science General Examination may be used toward the major in General Science (44 or 48 semester hours).

Science courses taken in other colleges within the University (for example, Colleges of Engineering and Medicine) will not be accepted toward the 44 or 48 semester hours needed for the major unless one of the science departments of the College of Liberal Arts listed above certifies that writing to the Registrar's Office that such a course is equivalent to one offered or required of majors in that department.

No courses taken in the three departments used for the major (non-teaching, basic-related, or teaching) may be taken Pass/Fail. Grades from all courses in the three departments used for the General Science major will be used in computing a student's grade-point average in the major both at The University of Iowa and overall.

Since mathematics forms an integral part of so many aspects of modern science, all General Science students are urged to complete numerous appropriate advanced courses in both pure and applied mathematics (including statistics and computer science) in order that they may be qualified as a later date to do graduate work and quantitative research.

Genetics
Program Chairperson: J. Devon Miller
Professor: Robert W. Chabot (Biochemistry), Thomas Conway (Biochemistry), Joseph Preul (Genetics), Vincent Scatena (Pediatrics), Roger Almoslino (Genetics), Devon Miller (Genetics), Larry E. Dietz (Oncology), George Faull (Genetics), James A. Guenst (Genetics), John M. (Ames) (Genetics), Dan R. Reis (Genetics), Michael A. Scatena (Pediatrics), John J. C. (Ames) (Genetics), Richard L. (Ames) (Genetics), Harry M. (Ames) (Genetics), Thomas W. (Ames) (Genetics), Robert B. (Ames) (Genetics), Joseph P. (Ames) (Genetics), James A. (Ames) (Genetics), Carol R. (Ames) (Genetics), Medical Sciences (Preventive Medicine), University of Iowa Hospitals and Clinics.

Degree offerings: Ph.D.

Interdepartmental Ph.D. Program in Genetics
The Interdepartmental Ph.D. Program in Genetics is designed to promote collaborative investigations and strong intellectual interactions among individual students and faculty participants who may be formally affiliated with different departments. Students enrolling in the program are encouraged to obtain a broad background in genetics, ranging from molecular to population genetics. Within this context, course requirements are nevertheless flexible enough to permit students to tailor their formal coursework to fit their individual needs. All students enrolled in the Interdepartmental Genetics Ph.D. Program are required to take three specific courses—General Biochemistry, Advanced Genetics and a one-hour seminar course given each semester. In addition, upper-level courses are grouped roughly into three areas—molecu-
lar and microbial genetics, cell and developmental genetics, and quantitative and population genetics; students are required to take three semester hours of courses in each of the three areas. Additional courses in genetics or related disciplines can be elected to provide supplementary background to the student's particular area of specialization.

Even more important than formal coursework is the opportunity to do meaningful research. Faculty members participating in the Ph.D. Program in Genetics all conduct active, stimulating research programs. Students are encouraged to enter the laboratory of their choice and begin their own research as quickly as possible. Research interests of the participating faculty range broadly from bacterial to human medical genetics. In each area of genetics there is a group of faculty members with closely related or overlapping interests. In addition, the University is strong in several related disciplines, including microbial physiology, enzymology; virology; protein biochemistry; developmental, cell and population biology, all of which contribute significantly to the overall training program.

In addition to research and coursework, students must also pass a comprehensive examination, which should usually be taken within the first two years in the program.

Entrance Requirements

It is expected that prospective students will have a strong undergraduate background in science and a strong commitment to research and teaching in genetics. Students should have taken courses in general genetics, organic chemistry, introductory physics and mathematics. Deficiencies in a particular area can be made up during the first year of graduate study. Criteria for admission include undergraduate academic record, performance on the Graduate Record Examination (GRE) verbal and quantitative aptitude tests, and letters of recommendation. Requirements for admission are not rigid. Though almost all of the students in genetics currently at Iowa have undergraduate grade-point averages (GPA's) greater than 3.2 and GRE totals (verbal plus mathematics) exceeding 1200, students with lower GPA's or GRE scores may be admitted depending on other indicators of their academic potential.

Applications for admission will be accepted any time but should be received by March 1 to insure consideration for entrance the following academic year.

Financial Aid

The most highly qualified applicants will be supported as National Institute of Health pre-doctoral trainees. Traineeships include a stipend of $3,000 for 12 months, complete tuition scholarships and additional support by trainees' research. In addition, stipends can be supplemented by occasional teaching assignments at the trainee's option. (Trainees are encouraged to do some teaching as part of their development as scientists and teachers.) Stipends may also be supported by half-time teaching or research assistantships, with stipends of about $4,500 per year. Students receiving assistantships may also apply for full or partial tuition scholarships.

The M.D.-Ph.D. Program

Students may combine study toward a M.D. and a Ph.D. in genetics. Those interested in doing so should apply to the M.D. Program in Genetics and to the College of Medicine for admission. Further information about the M.D.-Ph.D. program can be obtained from the Registrar of the College of Medicine.

Departmental Ph.D. Programs

The Department of Biochemistry, Botany, Microbiology and Zoology offer degree programs in which students may specialize in a particular aspect of genetics. Students are referred to departmental descriptions elsewhere in this catalog for further information about these programs.

Courses

Biochemistry

96.121 Molecular Genetics

Same as Zoology 77.177.

96.216 Genetics Seminars

Same as Botany 2.215, Microbiology 41.215 and Zoology 37.215.

Botany

2.102 GenetikII

3-4 a.h.

2.166 Phylogenetics

3 a.h.

2.266 Fundamental Genetics

Same as Zoology 27.126.

2.269 Fundamental Genetics Laboratory

Same as Zoology 27.129.

2.610 Genetics of Cell Organelles

3 a.h.

2.616 Genetics Seminars

Same as Biochemistry 96.215, Microbiology 41.215 and Zoology 37.215.

Microbiology

61.170 Microbial Genetics

3 a.h.

61.171 Microbial Genetics Laboratory

1 a.h.

61.270 Topics in Molecular Biology

Same as Zoology 37.129.

61.215 Genetics Seminars

Same as Biochemistry 96.215, Botany 2.215 and Zoology 37.215.

Zoology

27.100 Genetics

3-4 a.h.

27.135 Radiation Genetics

Same as Botany 3.128.

27.120 Genetics Laboratory

Same as Botany 3.129.

27.160 Advanced Genetics

4 a.h.

27.163 Population and Evolutionary Genetics

4 a.h.

27.163 Behavioral Genetics

4 a.h.

27.165 Quantitative Genetics

3 a.h.

27.171 Molecular Genetics

Same as Biochemistry 96.215.

27.172 Topics in Molecular Genetics

Same as Zoology 37.129.

27.173 Molecular Genetics Laboratory

1-2 a.h.

27.174 The Evolutionary Genetics

1-2 a.h.

27.178 Topics in Evolutionary Molecular Biology

2 a.h.

27.301 Evolutionary Genetics

3 a.h.

27.342 Seminar: Behavioral Genetics

1 a.h.

27.310 Genetics Seminars

6 a.h.

Same as Biochemistry 96.215, Botany 2.215 and Microbiology 41.215.

See departmental sections for detailed descriptions of these and related courses.
Geography

Department chairman: Clyde F. Kahn
Faculty: professor Kenneth J. Davis; Clyde F. Kahn; James B. Lichenberg; Michael L. Markham; David E. Ruggiero; Gertrude Rubin; Neil E. Seltzer; Alexander L. Schmitz; Jerald M. Szalay; Emersy E. Verge.
Degree offered: B.A., B.S., M.A., Ph.D.

Modern geography is concerned, mainly, with the spatial aspects of human geography and with man-environment relations. Students who elect courses in geography soon find that the insights and methods of inquiry they develop are applicable to the solution of many of the complex problems confronting modern societies, such as air and water pollution, transportation problems, the development of ghettos in large cities, distribution and consumption of natural resources, rapidly increasing populations and conflicts between nations. Studies in geography provide students with concepts and methods for organizing vast real estate units as urban areas, market regions, school districts and other kinds of service areas. Thus, today's geography contributes to the decision-making processes involved in determining how individuals or groups of individuals can improve the quality of life in this complex age.

Much of modern geography is problem-oriented. It is scientific as well as humanistic in its approach to the solution of these problems. It is involved with two basic considerations: the best means to obtain accurate facts or data; and the tools and techniques necessary for analyzing these data to see if they verify or alter existing explanations for the facts as they are observed.

Career opportunities for majors in geography exist in various branches of government and in business. There is a demand for persons capable of dealing with resource management, economic development, market area analysis and other problems related to the distribution and spatial interaction of physical, economic, social and political phenomena in the world as a whole or in major parts of it.

There is also a growing demand for young people concerned with international affairs and subsequent interactions with the total environment. Courses in geography are commonly required of students planning to enter the field of education 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, health care delivery systems and transportation engineering.

The Undergraduate Program

The geography faculty has developed an undergraduate instructional program which provides educational opportunities for a variety of students: (1) for the nonmajor interested in one or more elective courses as they relate to a liberal education; or for those interested in electing a cluster of courses in conjunction with another discipline, or for the B.G.S. degree; and (2) for those interested in acquiring a major in geography. The Department also joins in significant interdepartmental programs involving regional, urban and environmental components.

Courses for the Non-major

Students in the College of Liberal Arts or other schools and colleges of the University who do not plan to major in geography find meaningful study in the following programs:

- Natural Hazards (44:116), Natural Hazards (44:120), The Inner City (44:130), Urban Problems (44:139), The Third World (44:162), The Changing World (44:165) and Energy in Contemporary Society (44:191). These students are able to pursue their own intellectual curiosity; sometimes to gain breadth of knowledge; or sometimes to fulfill specific curricular needs, such as Maps and Mapping (44:107) or Environmental Impact Studies (44:125).

Students in several related disciplines and in the Bachelor of General Studies program take classes of courses in geography according to their individual interests. Those specializing in environmental studies might elect such upper level courses as Introduction to Weather and Climate (44:101), Natural Environmental Issues (44:119), Natural Hazards (44:202), Streams and Water: Process and Resources (44:212), Natural Hazards of the United States (44:122), Geography of Natural Resources (44:123), Environmental Impact Studies (44:125) and Field Techniques in Natural Environmental Problems (44:180).

For students interested in a cluster of advanced courses in urban geography, the Department offers Introduction to Urban Transportation (44:111), Urban Political Geography (44:116), Urban Geography (44:155), The Inner City (44:130), Metropolitan Growth and Development (44:137) and Urban Problems (44:139).

Students in business may benefit from taking such locational analysis courses as Introduction to Economic Geography (44:030), Location of Services (44:130) and Industrial Location (44:132).

Alternative Programs for the Undergraduate Major

Students electing to major in geography will be exposed to concepts and methods of inquiry in physical, economic, social and political geography, especially as they relate to urban areas. They will be taught how to state problems from a geographic point of view, where and how to find relevant data for analyzing these problems, how to relate their findings to existing theories and how to apply their findings to real world situations.

Students majoring in geography may choose alternative programs depending on their interests. The substantive strengths of the Department fall into three areas: environmental studies, urban and regional studies, and locational analysis. Students may choose to develop expertise in one of these areas, or they may choose to develop an individualized program within the curricula offered by the Department of Geography. Those interested in advanced training or seeking careers in geography should elect the Bachelor of Science degree. Those who wish to pursue a liberal arts objective are advised to elect the Bachelor of Arts degree.

All geography majors must complete a minimum of 26 semester hours of geography coursework, at least 15 of which must be at the 100-level. Many students will find that they will need more than the minimum requirements for mastery of a specific subfield.

All majors must complete the course Introduction to Quantitative Methods in Geography (44:108), or an equivalent as approved by the departmental chairman. All students select a faculty advisor and the Undergraduate Seminar for Geography Majors (44:150). Other than these two courses, the requirements vary with the specific program elected by the student.

Bachelors of Science students must complete either Introduction to Computing with FORTRAN (222:100) or Calculus I (222M:025).

Environmental Studies

The undergraduate program in environmental studies is designed for students with career expectations or personal interests in resource management or environmental protection, or who have interests in physical geography per se. The program provides a knowledge of physical processes in landform development, atmospheric conditions, soil development and biotic communities. It stresses the interrelationships among these processes and gives the
student knowledge necessary to assess the impact of human activities on physical systems. Training in field observation, quantitative analysis, computer methods and cartographic representation are included in this concentration.

Required technical courses include Introduction to Quantitative Methods in Geography (44:100), Undergraduate Seminar for Geography Majors (44:150), Field Techniques in Environmental Problems (44:180) and Introduction to Computing with FORTRAN (22C:100) or Calculus I (22M:025).

Students concentrating in environmental studies are advised to select substantive courses from among the following:

44:001 Introduction to Human Geography
44:002 Natural Environment and Man
44:101 Introduction to Weather and Climate
44:119 Natural Environmental Issues
44:120 Natural Hazards
44:121 Storms and Water: Processes and Resources
44:122 Natural Resources of the United States
44:123 Geography of Natural Resources
44:125 Environmental Impact Studies

Also recommended are Maps and Mapping (44:107) and Computer Methods in Geographical Analysis (44:109).

Under the direction of an advisor, students should select courses in related disciplines.

Urban and Regional Studies

Students with interests in urban and regional analysis or in development problems will find this concentration relevant, either as background training for graduate work or as preparation for entry-level positions in government and private businesses. This track stresses the problems and potentials of towns, cities and regions. The decision-making processes of individuals and institutions are stressed. Dealing with such problems as assessing sites for development potential, locating facilities and gauging neighborhood change brings the student "inside" the dynamic of contemporary cities. Required skills in quantitative analysis, cartography and computer usage are developed. Opportunities for experience in working with real problems are included.

Required technical courses include Introduction to Quantitative Methods in Geography (44:100), Spatial Organization (44:134), Undergraduate Seminar for Geography Majors (44:150), Introduction to Computing with FORTRAN (22C:100) or Calculus I (22M:025).

Students concentrating in urban and regional analysis or in problems of development are advised to select substantive courses from the following:

44:001 Introduction to Human Geography
44:002 Natural Environment and Man
44:011 Introduction to Social Geography
44:030 Introduction to Economic Geography
44:031 Introduction to Transportation Geography
44:035 Introduction to Urban Geography
44:111 Introduction to Urban Transportation
44:116 Urban Political Geography
44:130 Location of Services
44:132 Industrial Location
44:135 Urban Geography
44:136 The Inner City
44:139 Metropolitan Growth and Development
44:139 Urban Problems

Also recommended are Maps and Mapping (44:107) and Computer Methods in Geographical Analysis (44:109).

Under the direction of an advisor, students should select courses in related disciplines.

Locational Analysis

The concentration in locational analysis is designed for students who wish to gain expertise in this more traditional problem-solving field within human geography. Students learn to use modern technology to help them calculate solutions to such locational problems as selecting the best site for a store or public facility, estimating demand in an area, developing models of consumer behavior and gauging the impact of locational decisions.

The required professional courses include Introduction to Quantitative Methods in Geography (44:100), Spatial Organization (44:134), Undergraduate Seminar for Geography Majors (44:150), Introduction to Computing with FORTRAN (22C:100) or Calculus I (22M:025).

Students concentrating in locational analysis are advised to select substantive courses from the following:

44:001 Introduction to Human Geography
44:030 Introduction to Economic Geography
44:033 Introduction to Transportation Geography
44:111 Introduction to Urban Transportation
44:150 Location of Services
44:152 Industrial Location
44:177 Metropolitan Growth and Development
44:159 Urban Problems

Two additional technical courses are also recommended: Maps and Mapping (44:107) and Computer Methods in Geographical Analysis (44:109).

Under the direction of an advisor, students should select courses in related disciplines.

General Program

For those who do not wish to concentrate in any particular area of interest, a sound general liberal arts program in geography may be designed to provide such majors with a broad understanding of the discipline. The student must elect Introduction to Quantitative Methods in Geography (44:100) and Undergraduate Seminar for Geography Majors (44:150). Other courses should be chosen under the direction of an advisor. Such courses selected should be appropriate to each student's interests and needs.

Individual Programs

If none of these four alternatives are appropriate, students may design their own individual programs of instruction with the help of their advisor. Such programs, however, must include Introduction to Quantitative Methods in Geography (44:100), Spatial Organization (44:134), Undergraduate Seminar for Geography Majors (44:150), and either Introduction to Computing with FORTRAN (22C:100) or Calculus I (22M:025).

Students who wish to specialize in such areas as the geography of the third world, political geography or social geography, may want to design individual programs.

The Cooperative Education Program

The Department of Geography is a participant in the University's Cooperative Education Program, which provides opportunities for both undergraduate and graduate students to secure cooperative training assignments related to their academic programs.
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 formal verification methods; to prepare students for positions in research, teaching, or some area of applied geography; and to help students develop their ability to apply knowledge of facts, theories and methodology to specific societal programs. The achievement of these goals is demonstrated in large measure by the demand for Iowa graduates to fill positions on college and university faculties, in research-oriented institutions and in business and government.

The graduate program at Iowa is concerned with the locational analysis of physical, economic, social and political phenomena; the spatial aspects of human behavior; and the interaction of humans and their environment.

The Department offers specialized instruction in the teaching of geography at the college level (44:206 Teaching College Geography and 44:306 Research Seminar: The Teaching of Geography) for those interested in academic careers. 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 strongly encouraged to complete 44:206 Teaching College Geography.

Master of Arts Programs
The Department offers two programs leading to the Master of Arts degree, with and without thesis. Within this framework, there are two major tracks: one for students who wish to prepare for positions in research or teaching; the other for students who wish to prepare for some area of applied geography.

Students whose objective is the Master of Arts degree leading to a career in teaching or research are required to complete a minimum of 30 semester hours of graduate work including 44:201 Geographical Analysis 1 and 44:203 Geographical Analysis 2. The remainder of their programs must be composed of graduate-level coursework. They should consult with the student's adviser. 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.

Students whose objective is the Master of Arts degree leading to a career in some area of applied geography (commonly referred to as the Master of Arts program in Applied Geography) are required to complete a minimum of 30 semester hours of graduate work including 44:208 Quantitative Analysis 1 and 44:300 Seminar in Applied Problems. A computer language course, a cartography course or an equivalent and 44:203 Quantitative Analysis I, are required as prerequisites for 44:300. The remainder of the program will be composed of courses in geography and related departments as approved by the student's faculty adviser. Students are advised that it is advisable to complete the Master of Arts program in applied geography in one year if they enter with sufficient background. Those whose background is not adequate should plan an additional time. All students must pass a final oral and written examination. The coordinator of the program will conduct an initial screening and advising of incoming students. An appropriate adviser in the student's specified area of interest will be assigned to assist in tailoring a program to suit the needs of the student. The completed program must be approved by the Department and may be used as guidelines. Students should inquire about the internship program.

Doctor of Philosophy
Students whose objective is the Doctor of Philosophy degree are required to complete 44:201-202 Geographical Analysis I and II. The courses 44:203, 208 and 290 should be effective during the first year in residence; the course 44:202 may be taken at any time during the student's residence. Students may meet these requirements with a satisfactory performance in written examinations during the first week of the first semester for which they register.

Doctoral students must complete two research seminars, preferably during their second year in residence, under the direction of different faculty members. They are also required, unless excused by the faculty, to register for 44:350 Research Staff Seminar each semester while in residence. One semester hour of credit will be awarded each semester on a satisfactory/failatic basis for this course.

The remainder of the Ph.D. program includes appropriate graduate courses, seminars and research in geography chosen by students to reflect their area of interest; courses in disciplines closely related to the student's objectives and interests; and courses which satisfy the test requirements. Students develop their programs with the advice and consent of their advisers.

Programs for students who wish to study for the Ph.D. in geography are established separately for each student. For this reason, as soon as possible after beginning graduate work, doctoral students are urged to declare a general area of specialization within the discipline and to secure a faculty adviser. No later than their fourth semester in residence, doctoral students should declare a field of specialization within their general areas of interest and secure a faculty adviser to direct their program of study.

Preferably during their second year in residence, and not later than the fifth semester, doctoral students who have been admitted to the graduate program without advanced credit, must submit a thesis or a summary of research paper to the faculty, with the approval of their adviser. Students who have been admitted with advanced graduate credit of 24 semester hours or more, or the equivalent, must meet this requirement no later than their third semester in residence. The faculty will pass upon the merit of the research thesis demonstrated. Students become Ph.D. candidates when their qualifying paper has been accepted. No graduate appointment can be extended beyond the third semester in residence for students admitted with 24 semester hours of advanced graduate credit, or beyond the fifth semester in residence of other students, unless the student has completed an acceptable qualifying paper and has thereby become a candidate for a doctoral degree.

Research qualifications for the Ph.D. candidates are of two kinds. One is the course 44:350 Qualitative Analysis 2; the other is the course 44:203 Quantitative Analysis 2. The passed test may be satisfied by completing any other appropriate course, as approved by the faculty at the time the student declares his or her intent to take the comprehensive examination.

Candidates for the Ph.D. degree are required to pass a comprehensive examination. Some candidates are required to demonstrate advanced proficiency in a major area of specialization and a general knowledge of the discipline, including both content and methodology. Prior to taking the comprehensive examination, students must present a definition and review of their area of specialization in an appropriately scheduled open meeting, as for example, 44:350. Upon passing the comprehensive examination, the doctoral candidate will prepare a research design to be presented before the staff seminar. After receiving the critical comments of faculty and students, the candidate is expected to conduct the necessary research and to present his or her findings in
a dissertation which must be defended in a final oral examination.

All doctoral candidates are expected to have supervised experiences as classroom instructors and research assistants before being awarded the Ph.D. degree.

Graduate Admission
In determining the admission of a student to the graduate program, the Geography Department considers the total record of each student individually. In addition to the general rules and regulations set forth in the Manual of Rules and Regulations of the Graduate College, the Department considers the student's undergraduate grade-point average, especially during his or her junior and 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 study geography at The University of Iowa. An applicant with an undergraduate grade-point average between 2.3 and 2.75 will be admitted only for the M.A. degree on the condition that he or she achieves a grade-point average of 2.75 or better on the first 12 hours of graduate work as approved by the Department. Foreign students and others from undergraduate institutions which evaluate student on a basis other than grade-point averages will be considered according to their relative academic standing in their respective institutions. Applicants for graduate appointments are usually considered at the end of the second week in February.

Special Facilities
The Department possesses substantial equipment in the computer-mapping area including a GRID pen digitizer supported by the IMAC-PDS-4 mini-computer with a CRT for on-line editing of plotting work. It is expected that this system will be enlarged to include additional core space, a magnetic disc drive system and a hard copier. The University has an IBM 360 Model 65 computer and a CALCOMP plotter available to the Department. In addition an HP 2000F system with beck-e terminals is available for instructional use. Housed on the third floor of the Main Library, the Map Library contains more than 15,000 maps, a total of 2030 atlases and reference works, and about 80,000 serials photographs, primarily of Iowa. The map collection in the library is a depositary 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 aerial photographs for use by students in working out laboratory exercises.

Courses
Courses open to undergraduate students may be taken in any order or simultaneously. No undergraduate course is geography has any prerequisite. It is recommended, however, that majors take 44:108, 44:138 and 44:150 in that sequence. All courses below the 100-level are open to freshmen; 44:1, 44:2, 44:11, 44:19, 44:20 and 44:35 are available for science social science credit.

Primarily for Undergraduates
44:1 Introduction to Human Geography
4 a.h.
Application of geographic principles in contemporary social, economic and political problems. Problems of urban distribution, diffusion of culture, transition and perception.

44:5 Natural Environment and Man
4 a.h.
Social distribution of the world's natural resources including climate, water, forests, soils, vegetation and minerals; human role in defining nature of resource base; role of man in determining natural systems relationships including education, religion, recreation, medical, and other services; diffusion of ideas and styles over space.

44:11 Introduction to Social Geography
3 a.h.
Aptitude tests of population growth and distribution; cities within a population; housing, social organization and interaction; urban systems including education, religion, recreation, medical, and other services; diffusion of ideas and styles over space.

44:12 Natural Environmental Issues
3 a.h.
Issues arising from human use of natural environment and related problems resulting from expanding world populations; air, water and food pollution; population pressure on agricultural resources; energy and mineral resource requirements versus quality of environment.

44:16 Introduction to Economic Geography
3 a.h.
Location and spatial interaction of world's major types of economic activity; energy and minerals, manufacturing, transportation, trade and service centers.

44:18 Transportation Geography
3 a.h.
Basic concepts of transportation and their relationship to geography; spatial pattern and spatial structure associated with transportation.

44:19 Introduction to Urban Geography
3 a.h.
Problems of urbanization and city growth; spatial pattern and pattern of urban activities; aggregate considerations of contemporary urban problems; the city and its physical setting, comparative urban studies.

44:20 Readings for Undergraduates
arr.
Supervised readings in geography. Prerequisite: consent of instructor.

Courses for Undergraduates and Graduates
44:19 Introduction to Weather and Climate
3 a.h.
Basic distribution of weather elements, wind circulation, air masses, zones and general world climatic conditions including air pollution and climate change; laboratory work in study of weather maps and climatic data.

44:19 Geography in the School Curriculum
3 a.h.
Concepts and stresses of geography material in effective educational programs; methods of geographic instruction; use of individual media in reaching geography.

44:19 Maps and Mapping
3 a.h.
Qualities of a good map or diagram; types of maps or diagram for particular uses; major types of cartographic techniques; procedures for the compilation of maps and diagrams; laboratory experiences in making maps and diagrams.

44:8 Introduction to Quantitative Methods in Geography
3 a.h.
Applications of mathematical techniques in geography.

44:16 Computer Methods in Geographical Analysis
3 a.h.
Use of computer in map analysis; various mapping programs including SIMAP, CADAM, and others.

44:19 Urban Transportation
3 a.h.
Urban transportation defining the urban transportation system and the urban transport planning process; urban transportation coordination and pollution prevention; various projects as evident in Iowa City. Same as 320:111.

44:19 Urban Public Policy
3 a.h.
Relationships between local public policy and the functional and geographical organizations of urban political systems. U.S. metropolitan areas and the satisfactions of citizens preferences for public goods and services.

44:19 Natural Environmental Issues
3 a.h.
Issues arising from human use of the natural environment and related problems resulting from expanding world populations; air, water and food pollution; population pressure on agricultural resources; energy and mineral resource requirements versus the quality of the environment.

44:19 Natural Hazards
3 a.h.
Human-environment relationships under extreme environmental conditions; causes, characteristics and consequences of extreme events such as earthquakes, inundation, flooding, fires, drought and floods; issues attendant to these events, ranging from immediate response to the determination of occurrences and avoidance to long-term responses like forecasting, flood control, zoning, and insurance.

44:21 Storms and Water Processes Unconventionally
3-8 h.
Water as a resource and an agent shaping the form of the land surface; characteristics of stream drainage, basin and surface hydrology, floods and their interrelationships.

44:22 Natural Resources of the United States
3 a.h.
Nature and patterns of regional differences in the natural resource base for agriculture and industry including forest, water, mineral, energy, and regional environmental problems and conflicts arising from resource development.
Geology

Department chairs: Richard A. Nripps
Faculty: professors William Flikke, Ben Gledhill, Richard Nripps, Olbert Kipper, George R. McConnell, Helen Sanusi, Kenna Smith, Ronald Treado
adjunct professors Stanley Guest, George Hallberg, Walter Skirbitt; associate professors Richard Baker, John Carson, Kenneth Clark, Lee Dake, Philip Harback, Jeffrey Scholander; research associates Harriet Brierley 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, how man acquires his material needs from it, 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 many hiring agencies as the professional 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 as exploration geologists. Others go on to graduate school or take jobs with government conservation agencies. Some intend to enter law, medicine or business. Others are interested in urban planning, environmental studies, engineering, archeology, recreation education or oceanography as advanced areas.

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—in 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, a team-taught, laboratory-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 with few prerequisites—petrology, geology of Iowa, history of the vertebrates, a plant in crisis, minerals and world affairs—geomorphology, oceanography, use of native materials and ornithology.

Undergraduate Programs

Students majoring in geology must meet the general requirements of the College of Liberal Arts. It is recommended that they satisfy the language requirement with French, German or Russian, and the social science requirement with approved courses in economics, geography and/or anthropology.

Bachelor of Science Degree

The Bachelor of Science professional program is designed primarily as preparation for graduate study and for employment in industry. Required courses in this program (12.5 and 12.6) are the preferred introductory courses for geology majors).

Geology Courses

<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.5</td>
<td>Introduction to Geology</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>12.6</td>
<td>Evolution of the Earth</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>12.41</td>
<td>Mineralogy</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>12.52</td>
<td>Elementary Petrology and Geochem-</td>
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<td></td>
<td>istry</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>12.112</td>
<td>Geologic Field Methods</td>
<td>1 s.h.</td>
</tr>
<tr>
<td>12.113</td>
<td>Summer Field Course</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>12.121</td>
<td>Principles of Paleontology</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>12.181</td>
<td>Structural Geology</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>12.198</td>
<td>Junior Seminar</td>
<td>1 s.h.</td>
</tr>
<tr>
<td></td>
<td>Two elective geology courses</td>
<td>6 s.h.</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>37 s.h.</td>
</tr>
</tbody>
</table>

(11:23 and/or 11:24 may substitute for 12.5.)

Supporting Sciences

The geology major requires at least ten semesters of college-level mathematics, including either one semester of calculus or 22M:35 Engineering Mathematics I (computer science or statistics courses may be counted toward the ten-hour requirement), and eight hours of physics, eight hours of chemistry and five hours of college-level zoology or botany.

Bachelor of Arts Degree

The B.A. program is designed to provide a general background in geology, with a broader choice of electives than in the B.S. program, for students who are not planning to become professional geologists. With appropriate course work in education, the B.A. program provides a base for high school or community college
teaching. A general background in geology and allied fields is also applicable to interests in such areas as conservation and environmental problems. Course requirements (12:5 and 12:6 are
the preferred introductory courses for geology majors):

Geology Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:5</td>
<td>Introduction to Geology</td>
<td>4</td>
</tr>
<tr>
<td>12:7</td>
<td>Evolution of the Earth</td>
<td>4</td>
</tr>
<tr>
<td>12:41</td>
<td>Mineralogy</td>
<td>4</td>
</tr>
<tr>
<td>12:106</td>
<td>Geologic Map and Air Photo Inter-</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>pretations</td>
<td></td>
</tr>
<tr>
<td>12:121</td>
<td>Principles of Paleontology</td>
<td>3</td>
</tr>
<tr>
<td>12:116</td>
<td>Field Trip (two sections)</td>
<td>4</td>
</tr>
<tr>
<td>12:198</td>
<td>Junior Seminar</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Geology electives</td>
<td>12</td>
</tr>
</tbody>
</table>

(11:23 and/or 11:24 may substitute for 12:5.)

Mathematics

Ten semester hours of university-level mathematics, which may
include computer science or statistics.

Related Areas

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,
zooology 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. Geologic
Orientation (12:107) is required for all entering graduate students.

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 adviser and designates two additional faculty
members to form the student's advisory committee. The commit-
tee is responsible for approving a suitable program of coursework,
guiding the student in the development of research plans, and—
before the end of the student's first year of residence—approving
his or her thesis topic, if he or she is taking the degree with thesis.

The degree requires at least 30 semester hours of credit in
graduate level coursework, including not more than eight semester
hours of thesis and research credit, and at least 24 hours in
residence at Iowa.

Master's degree candidates complete at least one-half of the
Ph.D. language and tool requirements as part of the master's
program. Coursework taken to satisfy these requirements does not
count toward the semester-hour requirements for the degree.

To qualify for the final master's examination, the candidate
must have at least a 2.75 (4.0 = A) grade-point average on University
of Iowa graduate courses offered toward a degree.

The Master of Science Degree with Thesis

Students are encouraged to select thesis topics involving a variety
of geological subdisciplines and scientific skills. Mapping themes
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 on the activity and
on the geologic principles it involved and its value and broader
implications and applications. No college credit is granted for this
activity.

The M.S. degree without thesis requires at least 36 semester
hours of graduate coursework, of which at least eight hours must
be earned in other departments of the University.

The faculty in geology may also require the student to submit a
formal scientific report dealing with an appropriate subject or
project. Credit may be granted for this report.

The final examination covers coursework and work done in lieu
of the thesis.
The Master of Arts in Teaching (Earth Science)

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.

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 tools.

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. Courses coordinated between geology and other departments are not generally considered to meet this requirement.

At least 24 semester hours of graduate coursework, exclusive of credits for dissertation research and beyond coursework applied toward the M.S. degree.

The comprehensive examination covers—in depth—all subdivisions of one major field and one subdivision in each of three other major fields. It is also presumed that the doctoral candidate is proficient in the basic elements of general geology, as presented by current elementary textbooks. These are the major and minor fields:

Economic Geology

Petroleum

Economic Minerals

Exploration Geophysics

Petroleum-Mineralogy

Mineralogy

Igneous and Metamorphic Petrology

Experimental Petrology

Structural Geology

Geotechnics

Structural Analysis

Remote Sensing

Stratigraphy

Physical Stratigraphy

Biostratigraphy

Depositional Environments

Sedimentary Petrology

Sedimentation

Sandstone and Carbonate Petrology

Physical Stratigraphy

Pelecypod Studies

Pelecypod Geology

Vernerean Paleontology

Pleistocene Geology

Pelecypod Paleontology

Pelecypod Biostratigraphy

Geomorphology

General Geomorphology

Glacial and Pleistocene

Remote Sensing

Environmental Geology

Ground Water

Remote Sensing

Ecology

Other Minor Subject

Botany

Zoology

Chemistry

Physics

Geography

Hydraulics

Archaeology-Antropology

Science Education

Others
Cooperative Activities
The Department has joint professorships with the Iowa Geological Survey and the Department of Botany, entomology, and horticulture, forest land use, and work on projects for the survey. There is also cooperation between the geology, geography, anthropology, chemistry, botany, zoology and physiology departments in service, expertise, joint instruction and equipment.

Field Trips
Field trips are integral parts of several courses in geology. Weekend and 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 geohydrological environments are available within a few hours' drive. All four Pleistocene glaciations are represented in Iowa and each offers distinctive landforms and fossil assemblages. Spring breaks provide time for longer trips which are available to all geology students. In recent years these have included the Grand Canyon, the Florida Keys, the southern Appalachians, the Big Bend Region of Texas and the Ozarka. Advanced courses for seniors and graduate students visit Colorado, Ontario, Kansas, Oklahoma, and California.

Courses
Primarily for Undergraduates
123:1 Lecture in Earth History and Geosystems 3 a.h.
Not open to those who have had Core 1125, 1125, 1125 or 124.
123:2 Lecture in Man and His Physical Environment 3 a.h.
Not open to those who have had Core 1124. 123:2 and 123:25 exercises modern environmental studies on and within earth and human processes by which they evolved; exploration of organisms and man's current use and misuse of primeval environments.
123:3 Principles of Physical Geology 3 a.h.
Introductory course focusing on principles that have generated and control our planet's history by examining its physical environment, composition and development of its surface from the geologic past to the present. The course is divided into two parts: 1) the study of rocks and minerals and the geologic history of earth (and other planets), 2) the study of oceanography and earth's dynamic processes: surface processes, meteorology, and paleoclimatology. Grading: satisfactory or unsatisfactory. Open to all those who have had elementary geology course in earth or science.
123:4 Principles of Historical Geology 3 a.h.
Earth history through five billion years, with emphasis on last 600 million years. An introduction to major rock types and their relative ages, and the study of the geologic processes that have affected the earth since its formation. Open to all those who have had Core 1123, 1125 or independent study.
123:5 Introduction to Geology 3 a.h.
Lectures and laboratory: topics include soils, rocks, minerals, weathering, soils, ecosystems, biogeochemistry, landscape, and natural resources and natural hazards. Open to all those who have had Core 1123, 1125, or independent study.
123:6 Evaluation of the Earth 3 a.h.
Lectures, laboratory, discussions and field trips, emphasizing the scientific and technological aspects of the earth. Topics include: origins of the earth, history and evolution of earth's environment, current environmental problems, and strategies for understanding and solving environmental problems. Open to all who have had Core 1125, 1125 or independent study.
123:7 Honor's Thesis in Geology 3 a.h.
For students who have had previous courses in geology; lectures and field trips.
123:8 Field Trip 3 a.h.
Seven or nine days during spring months in areas of geologic interest: volcanics of northern British Columbia, coastal British Columbia, the Trench, western Kansas, salt marshes of the Gulf Coast, the Ozarka, and the Ozarka, the Ozarka, and the Ozarka, the Ozarka, and the Ozarka.
123:9 Biogeography 3 a.h.
German

Department chairman: Erwin Bittner
Field director of American University in Berlin: Prof. Dr. Paul Loeschke, Berlin University of Economics, Business Administration, and Law.

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 of the Germanic peoples.

The Undergraduate Program

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 (13:21 Second-Semester German); for such a student it is not sufficiently prepared for 13:21, he or she can secure permission to register for 13:12 Second-Semester German, or enroll in 13:11 First-Semester German. Proficiency placement exams may be given to students for whom the regular procedure does not seem suitable. 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: Elementary Composition and Conversation 3 s.h.

Second Year

13:31 Introduction to Modern German Literature I 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.

Fourth Year

13:101 German Syntax 3 s.h.
13:105 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 are 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, graduate as well as undergraduate, are urged to supplement their degree programs with 16:141 and 16:142 (Ger-

man 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 cer-
tification are subject to change and could conflict with the sequential requirements of the major in German, it is imperative that the student consult with the Department chairman or under-

graduate 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 Intermediates Composition and Conversation I
13:34 Intermediates Composition and Conversation II
13:101 German Style/S

Honor's in German
German majors of junior or senior standing with a grade-point average of at least 3.0 overall and 3.3 in German may enroll in this program. During the junior and senior year the honor student in German is expected to engage in extra readings, discussions and the writing of a term paper (if feasible) for each of the courses in which he or she is enrolled. A senior essay, written under the supervision of a faculty member, and a comprehensive oral ex-
amination 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. Students may also benefit from our new Computer Assisted Instruction program.

An extensive collection of works and periodicals in the Univer-
sity Library facilitates research in all major areas of German literature and Germanic linguistics at all levels of study.

Foreign Study
The Department of German participates in the Summer Program in 

Austria and Germany. Sponsored by the three Iowa Regents 

Universities, this program is open to students of all disciplines.

The Program is designed to provide a sound linguistic, cultural and 

academic experience to all participants.

The Summer Program consists of an 8-week experience in 

Austria and Germany. The first 3-week session is conducted at St.

Radegund, near Graz, Austria. Instruction in both language and 
culture is provided on three levels—intermediate, advanced and 

very advanced. A second 4-week session is held in Vienna where 

faculty of the International University at the University of Vienna 

course meetings classes daily, again on several levels. A 10-day 
tour of Germany and Austria concludes the program.

To be admitted to either program, the prospective participant 

must qualify for admission to one of the three Iowa Regents 

Universities, and must have completed a minimum of 12 semester 

hours (or the equivalent) of college-level German. 

Tuition grants and loans 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 continue to 

the MA degree must elect the program with thesis. The thesis 

program requires a minimum of 30 semester hours, or equivalent, 

of graduate-level work. If the student has not completed major 
courses, or equivalents, in the Department's undergraduate pro-

gram, he or she will include them along with the courses required 

for the Master of Arts. Under some circumstances, the candidate 

may qualify for graduate credit for such make-up work.

Additional courses are selected with the approval of the gradu-

ate adviser.

With the graduate adviser's approval, some of the 30 semester 

hours required for the degree may be taken outside the Depart-

ment, 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 faculty.

Students planning to go on to the Ph.D. degree are required to 

write a thesis unless they have Department approval to do other-

wise.

Before the M.A. exam can be administered—usually after ac-

ceptance of the M.A. thesis, the candidate must show a compet-

tence level in a foreign language other than German equivalent to 
two years of college study or four years of high school study, with 
a grade of "B" or higher.

M.A. Degree Without Thesis
A graduate student who desires his or her program to be oriented in 
the direction of optimum preparation for secondary school teach-

ing, government service, translation, etc., may elect the one-

without thesis. This program requires a minimum of 36 semester 

hours of coursework and is considered terminal. The same course 

requirements outlined for the M.A. with thesis apply to candidates 

for the M.A. without thesis; however, students in this program 

should, with the approval of the graduate adviser, choose those 
courses which will best prepare them.

Suggested Courses for the Master of Arts Degree
13:102 Advanced German Stylistics 3 s.h.
13:103 German Phonology 3 s.h.
13:201-2 German Prosessiare 6 s.h.
13:285 Goethe 3 s.h.

Any one of the following:
13:241 History of the German Language 3 s.h.
13:243 Middle High German 3 s.h.
13:245 Old High German 3 s.h.
Any one of the following:
13:251 Early German Literature 3 s.h.
13:261 German Literature of the Renaissance and Reformation 3 s.h.
13:271 German Literature of the Baroque 3 s.h.
Any one of the following:
13:182 Lessing 3 s.h.
13:281 The Age of the Enlightenment and the Early Period of Storm and Stress 3 s.h.
13:286 Schiller 3 s.h.
Any one of the following:
13:291 German Romanticism 3 s.h.
13:294 German Realism 3 s.h.
13:295 Naturalism, Impressionism and Expressionism in German Literature 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 the equivalent beyond the requirements for the M.A. degree, and fulfillment of other requirements of the Department of German and the Graduate College. The candidate may concentrate in either Germanic linguistics or German literature.
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 concentration. The student may earn up to 12 additional semester hours of credit for satisfactory completion of the Ph.D. dissertation. Some graduate courses outside the Department in related subjects may be counted toward the degree with the approval of the graduate adviser. Whenever possible, the Department will afford the opportunity and privilege to deserving graduate students to gain valuable teaching experience under supervision by making available such awards as teaching-research fellowships, teaching assistantships, etc.
A candidate concentrating in literature must demonstrate a reading knowledge of French and of another language which his or her adviser certifies is pertinent to the student's research interests. A reading knowledge of French or Russian and of a modern Scandinavian language or Dutch is required of all doctoral candidates in Germanic linguistics. Competence in these languages may be demonstrated by two years of college study or four years of high school study, with a grade of "B" or higher, or through testing by the Department. The requirements must be met before the comprehensive exams can be administered.

Courses

Primary for Undergraduates

13:11 First Semester German 3 s.h.

Reading Approach. Emphasis on reading and basic structure of the language, or (b) Grammar Approach. Emphasis on learning the grammar through listening and speaking, with one additional hour of language laboratory per week.
13:12 Second Semester German 3 s.h.

Complements 13:11, with some topics of each approach. Greater emphasis on vocabulary and conversation.
13:13 Intensive Elementary German 6 s.h.

Complements normal first and second semester courses. Additional hours of language laboratory will be required. Undergraduate only.
13:17 German Herods and Erotic Literature of the Middle Ages 4 s.h.

Handicaps of this period, including
Pentheus, the Nibbepalproeller, and Tristan, read in English translation; satisfies social-science core requirement in literature; also devised for literate majors and may be taken by other interested undergraduates. Same as Core 11:17.
13:21 Third Semester German 3 s.h.

Basic structure of German language reviewed; emphasis on exact reading, basic conversation and composition. Students may also take 13:22 in "Business German" (composition, reading and grammar). No business background required. A student who has had all three units of the basic course sequence, 13:11, 13:12 and 13:21 or equivalent, has the option of taking either 13:22 or 13:25 for his or her fourth semester. Courses 13:22 and 13:25 are in no way duplicate each other, as they may be taken concurrently or in sequence for full credit.
13:23 Fourth Semester German: Reading 3 s.h.

Standard fourth-semester course; satisfies foreign language requirement for B.A. degree; reading of short but representative literary works.
13:25 Fourth Semester German: Elementary Composition and Conversation 3 s.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 in German, etc.
13:26 Intensive Second Year German 6 s.h.

Complements normal third and fourth semester courses. Emphasis on speaking as well as reading. Additional hours of language laboratory will be required. Undergraduate only.
13:29 Introduction to Modern German Literature 3 s.h.

Reading and discussion of representative German authors whose works influence modern times. Prerequisite: 13:22 or equivalent. Same as School of Letters 108:31.
13:30 Introduction to Modern German Literature II 3 s.h.

Continuation of 13:29. Prerequisite: 13:21 or equivalent. Same as School of Letters 108:32.
13:32 Intermediate Composition and Conversation I 3 s.h.

Preparation in translation of selected English texts, preparing for German texts, learning of German conversational patterns, intensive drills in word comprehension and oral expression. Prerequisite: 13:22 or equivalent.
13:33 Intermediate Composition and Conversation II 3 s.h.

Continuation of 13:32, with more emphasis on original composition and correspondence. Prerequisite: 13:32 or equivalent.
13:34 Southern Germany 3 s.h.

13:35 Honors Program in German

For Undergraduates and Graduates

(Some of the courses listed below are offered at irregular intervals)
14001 Individual German 1 s.h.

Open only to German majors and minors.
13:11 German Realities

Oral and written exercises; required of undergraduate German majors and minors. Prerequisite: 13:10.
13:28 Advanced German Stylistics 1 s.h.

Literary composition, vocabulary building, exercises in communication skills. Prerequisite: for first-year graduate students; permission of instructor required. May be repeated for credit. Prerequisite: 13:25 or equivalent.
13:29 German Phonology 3 s.h.

Analysis of structure and sound system of German language and introduction in problems of German phonology and syntax; basic linguistic course. Same as School of Letters 107:43.
13:30 German Cultural History 4 s.h.

Historical history of Germany from earliest beginnings to present, with special emphasis on development of arts, philosophy and literature.
13:297 Teaching of German 3 s.h.

Prep-for-Ph.D. training course for graduate teaching assistants in the Department. 13:298 Regina Program Abroad

An 8-week study of the German language and culture in Austria and Germany. Given at various times. Prerequisite: 13:25 or college level German or equivalent.
13:111 Survey of German Literature I 3 s.h.

Survey of German literature. Same as School of Letters 1775. Prerequisite: 13:25 or equivalent. Same as School of Letters 108:121.
History

Department chairman: Lawrence Lader


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

The purpose of the Department of History is to enlarge knowledge of the human experience and to provide students with opportunities to gain information and learn methods for understanding the 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, Asian Studies, and Women’s Studies.

The Undergraduate Program

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. A major in history includes work in other fields that will illuminate and expand the meaning of history courses as well as introduce the undergraduate to different bodies of information and approaches to understanding the ways societies and cultures work. It is, for example, strongly recommended that the college degree requirement in a foreign language be met by selecting one that fits in with the major student’s history interests: someone studying French history will obviously find the French language a great enrichment of his general education than the pursuit of a language quite unrelated to his interests in his major.

General Major in History

The general major in history 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; this limitation is imposed to assure acquaintance with the history of at least one other society besides our own.
- Three semester hours in 16:50 Colloquium for History Majors.

These three semester hours in 16:50 Colloquium for History Majors at The University of Iowa.

A minimum of 24 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; or by a second major in one of these areas. Core courses and courses taken to satisfy core requirements will not be counted toward the related-areas requirement.

It is recommended but not required that the student pursuing the major elect the College of Liberal Arts cultural-core course requirements with 11:29-30 Problems in Human History, 11:31-32 Western Civilization, or 11:35-36 Civilizations of Asia.

Prospective Teachers in History

To enroll in this program, the student must secure approval from one of the advisors (in the College of Education) 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 11:35-36.
- At least 18 semester hours in courses offered by the History Department, including at least eight hours in American history and at least three hours in ancient world or medieval European history.
- At least 24 semester hours of work in basic courses in three of these areas of the social sciences: anthropology, economics, geography, political science, and sociology; courses taken to fulfill the core requirements will not be counted toward this requirement.
- Required courses in teaching methods and practice teaching. (See "College of Education.")

Honors

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. 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 usually must be made by the beginning of the junior year, and may be made earlier. Successful completion of the honors major 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. Colloquium courses may also be counted for honors credit in lieu of honors seminars.

- Related courses outside the department (same as regular major requirement).

Successful completion and oral defense of an honors thesis.
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 (see "College of Law"). Qualified graduate students are invited to apply for fellowships and assistantships. Inquiries should be directed to the departmental office.

The Master's Degree

There are two M.A. programs in the History Department. The first is for students who plan to work for the Ph.D. 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. Two-thirds, 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 readings 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 seminar in the major division and be continued with 16-256 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.

Students who complete the M.A. under the alternative plan may not become candidates for the doctorate in history. The M.A. 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 reading or seminar course. The program must also include at least six semester hours in each of two other division 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 M.A. candidate must take an oral and written comprehensive examination in the major division.

Doctor of Philosophy

Students who earn the M.A. with research essay 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 24 semester hours in 200-level courses in history, apart from thesis credit. At least 16 of these 24 hours must be completed before taking the comprehensive examinations, and at least 16 of these 24 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 media-defined historiography. The department has no common language requirement for the Ph.D., but the supervisor may require the candidate to demonstrate a reading knowledge of one or more foreign languages and proficiency in the use of other tools of study. The candidate may not complete the comprehensive examination until these requirements have been met.

The comprehensive written and 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, 1300 to 1815
- Europe, 1815 to Present
- Russia and the Soviet Union
- United States History
- Latin American History
- History of China
- History of Japan
- History of India

The committee may define and delimit the individual fields for examination. It may also set, separately for each field, the character of the written portion of the comprehensive examination, which may take the form of a syllabus, a critical bibliography, a topical paper, or any other form or combination of these or other forms that the committee deems suitable. The oral portion of the comprehensive examination will focus on issues and problems arising from the examination papers.

Graduate Admission

All applicants for admission, whether for the M.A. or the Ph.D. degree, 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 are made in the fall preceding the academic year. Applications for admission are due April 15 and November 10 for the following semesters. An applicant must take the Graduate Record Examination (aptitude test) 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 department's Guide to Graduate Study sent to all applicants for admission. The Guide is revised every spring to include the latest changes in the faculty, the courses to be offered the following year, and the research interests of the members of the faculty, as well as detailed regulations on study toward advanced degrees and other information of interest to prospective students.

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 other important materials. In European history, the special strengths are in French and English materials. The Iowa State Historical Society in Iowa City and the Herbert Hoover Presidential Library in West Branch possess additional research materials of great value.

Courses

All courses numbered 200 and above are open to business provided they have already satisfied the baccalaureate core requirement.
History

1616 European Artistic Revolution 1450-1800 3.5 a.h.

The Renaissance and the Reformation after the Middle Ages: the significance of the Italian culture in European history.

1616 British Political Thought 3 a.h.

English literature in the Elizabethan age.

1616 Modern European Social Thought: Adam Smith to Marx 3 a.h.


1617 American Social Thought 2 a.h.

Analysis of the origins and atmosphere of men's social and political theory, with some studies in the Enlightenment view men as well.

1618 The Enlightenment 1698-1789 3 a.h.

Enlightenment, Voltaire, Rousseau, and other studies of the 18th century.

1619 War and Society 3 a.h.

1620 Literature and Society 3 a.h.

1621 History of East Central Europe to 1850 3 a.h.

Problems in political, socioeconomic, and cultural history of the Polish-Lithuanian Commonwealth, Kingdom of Hungary, and Habsburg Monarchy.

1622 History of East Central Europe 1850-Pre 3 a.h.

Social conflict on period of independent establishment (1815-1850) and new Central European systems in the history of the Pale and Non-Caucasian peoples of the Eastern Empire.

1623 European Intellectual History: Darwin-Pre 3 a.h.

1624 Chinese Revolutions and Mongolia Revolutions 1862 3 a.h.

Major political, socioeconomic, and intellectual developments in Imperial Russia.

1625 Soviet Union 1917-Pre 3 a.h.

History of the Revolution, political, socioeconomic and intellectual developments in Soviet period.

1626 English Civilization for Literature Students 3 a.h.

A survey of the English history by some British authors.

1628 Sea, Society and Culture of Transpennine Europe 3-3.5 a.h.

1629 Sea, Society and Culture of Modern Europe 3-3.5 a.h.

1630 British Empire 3.5 a.h.

1634 The Central Period in American Civilization 3 a.h.

Foundation and growth of English colonies in North American; colonial and imperial political history before 1715, economic and cultural history, 1650-1700.

1635 American Revolution Period 1740-1789 3 a.h.

Political economy, military history of the colonies 1715-1763, imperial upheaval, creation of federal union.

1636 English Writers in the Middle Period 1759-1849 3 a.h.

Development and early modern through Victorian, with emphasis on political and social history and literature.

1637 United States in the Middle Period 1849-1927 3 a.h.

Conflict of nationalism and assimilationist policies in Civil War and Reconstruction.

1638 The Old Age in America 3 a.h.

Emergence of industrial and other Angeles, from the Civil War through the 1890.

1639 The Progressive Era in America 3 a.h.

The problems and impetus of World War I, from 1890 to 1920.

1640 The Contemporary United States 1929-1940 3 a.h.

U.S. in the interwar period, with emphasis on the New Era system, the impact of the Great Depression and the reappearance of the American economic and social life; some developments from 1929.

1641 The Contemporary United States 1940-Pre 3 a.h.

U.S. as a global power, with emphasis on World War II and the Cold War, social patterns of social and economic change, and the politics of the 1960s and 1980s.

1642 The United States and World War I, from 1914 to 1920. 3 a.h.

1643 The Great Depression and the End of the American Century 1929-1940 3 a.h.

Stated the American Revolution did and did not present change to political, governmental, economic, and social life; some developments from 1929.

1646 Modern African History 3 a.h.

Selected topics in the history of the 20th century. Topics may vary. May be repeated. Same as American Civilizations 4215.

1647 This Frontier in American History 1600-3 a.h.

Settlements of the western half of the American continent, in 1600; significance of land to American development; the conflict between Europeans and Indian civilizations.

1647 Frontier in American History 1600-1900 3 a.h.

Settlement and economic development of the non-Mississippi West excited in topical sequence.

1648 American Economy to 1860 3 a.h.

Development of the economy.

1649 American Business History 3 a.h.

1650 Puritanism in America 3 a.h.

1651 United States in World Affairs 1860-1920 3 a.h.

1652 American Thought and Culture 1860-1920 3 a.h.

1653 American Thought and Culture 1860-Pre 3 a.h.

1654 The Western Front: Power and Myth 3 a.h.

1655 Studies in History of Women in America 3 a.h.

1656 History of the United States 1860-1914 3 a.h.

History of the United States and its place in the world, from 1865 to 1914.

1657 U.S. Urban Society and Politics Pre-1914 3 a.h.

1658 Urban Environment in U.S. History 3 a.h.

1659 Religious Thought in America 1600-1880 3 a.h.

The beliefs held in the "lazy and tốt in Dexter", with references to selected leaders of American thought during this era. Same as Religion 22:75.

1660 Religious Thought in America 1880-Pre 3 a.h.

Continuation of 16:59. May be taken independently. Same as Religion 32:76.

1661 Latin America in the Twentieth Century 1920-1950 3 a.h.

1662 Latin America in the Twentieth Century 1920-1950 3 a.h.

Study of the Latin American development, and Latin American problems. Emphasis on the importance of the Latin American society and culture of the period.

1663 The Mexican Revolution 3 a.h.


1664 History of Modern India 3 a.h.

1665 History of Ancient India 3 a.h.

1666 History of Medieval India 3 a.h.

1667 Development of Chinese civilization in premodern times, emphasizing early, development; emphasis on political, military and political developments.

1668 Development of Chinese civilization in premodern times, emphasizing early, development; emphasis on political, military and political developments.

1669 Development of Chinese civilization in premodern times, emphasizing early, development; emphasis on political, military and political developments.

1670 Development of Chinese civilization in premodern times, emphasizing early, development; emphasis on political, military and political developments.

1671 Development of Chinese civilization in premodern times, emphasizing early, development; emphasis on political, military and political developments.

1672 Development of Chinese civilization in premodern times, emphasizing early, development; emphasis on political, military and political developments.
17:155 Survey of Traditional Interests 4 s.h.
17:160 Textile Design: Printing and Dyeing 3 s.h.
17:167 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.
11:37 History and Appreciation of Art 4 s.h.
or
11:38 Art in the Western World 4 s.h.
18:1 or 2 Elements of Art 2-3 s.h.
A two-dimensional studio art course

Two of the following:
17:153 Interior Design: Principles and Practices II 7 s.h.
17:154 Interior Design: Principles and Practices III 3 s.h.
17:156 Survey of Modern Interiors 2 s.h.
17:157 Historic Restoration Management 3 s.h.
17:162 Textile Design: Basic Weaving 3 s.h.
17:163 Textile Design: Intermediate Weaving 3 s.h.
17:164 Textile Design: Forms and Fibers 3 s.h.

One of the following:
68:31 Introduction to Marketing 3 s.h.
68:1 or 2 Principles of Economics 4 s.h.

Electives from home economics, business administration, urban and regional planning, art history, studio art, social sciences and computer science as selected.

Family Development

This program prepares students for careers with agencies and services concerned with the total family and its functioning, for family life education and the extension service.

Required:
17:10 Growth and Development of the Young Child 3 s.h.
17:111 Management of Family Resources 3 s.h.
or
17:112 Family Economics 3 s.h.
17:115 Parent-Child Relationships 3 s.h.
17:119 Directed Studies in Family Develop-
  ment 3 s.h.
17:122 Materials and Methods in Family Life Education 3 s.h.
17:190 Seminar: Home Economics 2 s.h.
31:1 Elementary Psychology 4 s.h.
34:1 Introduction to Sociology: Principles 4 s.h.

One course from each of the following areas:
  Design and housing 3 s.h.
  Food and nutrition 3 s.h.
  Textiles and clothing 3 s.h.

Two of the following:
34:190 The Role of Women in Various Societies 3 s.h.
34:161 Sociology of the American Family 3 s.h.
34:162 The Sociology of Dating, Courtship and Marriage 3 s.h.
Electives from education, social work, psychology and sociology as recommended.

Food and Nutrition

This program prepares students for careers in dietetics in the food industry, and for service with community and government agen-
cies.

Required:
17:131 Food Study 2 s.h.
17:132 Food Study Laboratory 2 s.h.
17:133 Food Management 3 s.h.
17:134 Experimental Food I 3 s.h.
17:135 Experimental Food II 3 s.h.
or
17:145 Advanced Nutrition 3 s.h.
17:142 Nutrition 3 s.h.
17:190 Seminar: Home Economics 2 s.h.
  Principles of Chemistry I 3 s.h.
  Principles of Chemistry II 3 s.h.
  Organic Chemistry I 3 s.h.
  Organic Chemistry II 3 s.h.
  Intermediate Chemistry Lab II 2 s.h.
  General Microbiology 4 s.h.
  Introduction to Human Physiology 4 s.h.
  The Chemistry of Biological Materials 3 s.h.
  Metabolism 3 s.h.

One course from each of the following areas:
  Design and housing 3 s.h.
  Family development 3 s.h.
  Textiles and clothing 3 s.h.

Electives should be selected from home economics and the natural sciences.

Concentration in nutrition with emphasis on dietetics requires:
17:131 Food Study 2 s.h.
17:132 Food Study Laboratory 2 s.h.
17:133 Food Management 3 s.h.
17:134 Experimental Food I 7 s.h.
17:136 Institution Management I 3 s.h.
17:137 Institution Management II 3 s.h.
17:142 Nutrition 3 s.h.
17:145 Advanced Nutrition 3 s.h.
17:147 Diet Therapy 3 s.h.
17:190 Seminar: Home Economics 2 s.h.
  Principles of Chemistry I 3 s.h.
  Principles of Chemistry II 3 s.h.
  Elementary Chemistry Laboratory 2 s.h.
  Organic Chemistry I 3 s.h.
  The Chemistry of Biological Materials 3 s.h.
  Metabolism 3 s.h.
  Principles of Economics 4 s.h.
  Employment Relations in the Public Sec-
tor 3 s.h.
  Educational Psychology and Manage-
  ment 3 s.h.
  Educational Psychology 3-4 s.h.
  Introduction to Sociology: Principles 4 s.h.
or
  Elementary Psychology 4 s.h.
  General Microbiology 4 s.h.
  Introduction to Human Physiology 4 s.h.
  Introduction to the Study of Culture and Society 4 s.h.
Home Economics Education

This program leads to certification and vocational approval in home economics. Graduates are qualified to teach home economics in vocational and nonvocational secondary schools, to work in home economics extension and other agencies, and to teach in classroom settings. Students must be admitted to the teacher education program and complete the professional education requirements. (See College of Education.)

To be eligible for student teaching, the student must have completed 28 semester hours with a 2.2 cumulative GPA, a 2.5 GPA on education courses and a 2.5 GPA on home economics courses with no grade below "C" on those home economics courses required for home economics endorsement and vocational approval.

Required:

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:10 Growth and Development of the Young Child</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>17:51 Introduction Food Study</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>or 17:131-132 Food Study--Food Study Laboratory</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>17:133 Meal Management</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>17:41 Contemporary Nutrition</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>or 17:142 Nutrition</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>17:50 Design for the Home</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>17:165 Family Housing</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>17:71 Intermediate Clothing Construction</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>or 17:72 Clothing Design and Selection</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>or 17:170 Advanced Clothing Construction and Tailoring</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>17:41 Textile Fibers</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>17:111 Management of Family Resources</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>17:112 Family Economics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>17:113 Marriage and Family Interaction</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>or 17:114 Parent-Child Relationships</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>or 17:122 Materials and Methods in Family Life</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>17:121 Curriculum: Home Economics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>17:128 Evaluation: Home Economics</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>17:190 Seminar: Home Economics</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>18:1 or 2 Elements of Art</td>
<td>2-3 s.h.</td>
</tr>
<tr>
<td>60:1 or 2 Principles of Economics</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>79:75 Educational Psychology and Measurement</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>75:91 Pre-Education Practicum</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>75:100 Introduction: Secondary School Teaching</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>75:125 Methods: Home Economics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>75:187 Seminar: Curriculum and Student Teaching</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>75:191 Observation and Laboratory Practice in the Secondary School</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>75:192 Observation and Laboratory Practice in the Secondary School</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31:1 Elementary Psychology</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>34:1 Introduction to Sociology: Principles</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>31:4 A course in American politics, American</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>history of American agriculture</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

Electives should be selected from education, journalism, psychology, sociology and communication.

Textiles and Clothing

This program prepares students for careers in merchandising. Concentration in fashion merchandising requires:

- 17:70 Introductory Clothing Construction 3 s.h.
- 17:72 Clothing Design and Selection 3 s.h.
- 17:81 Textile Fibers 4 s.h.
- 17:170 Advanced Clothing Construction and Tailoring 3 s.h.
- 17:173 Fashion Merchandising 3 s.h.
- 17:181 Textile Dys. Finishes and Detergents 4 s.h.
- 17:183 Textile Analysis 4 s.h.
- 17:183 Textile Economics 3 s.h.
- 17:190 Seminar: Home Economics 2 s.h.

One course from each of the following areas:
- Design and housing 3 s.h.
- Textile development 3 s.h.
- Food and nutrition 3 s.h.

Electives from the following courses are recommended: 3 s.h.
- 17:170 Advanced Clothing Construction and Tailoring
- 17:181 Textile Dys. Finishes and Detergents
- 17:183 Textile Analysis
- 17:183 Textile Economics
- 17:184 Textile Quality Control
- 17:190 Seminar: Home Economics
- 4:7 General Chemistry I
- 4:8 General Chemistry II
- 4:9 General Chemistry Laboratory
- 60:1 Principles of Economics

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 from computer science, statistics, engineering, psychology, chemistry, economics, and design and housing are recommended.

Electives should be selected from education, journalism, psychology, sociology and communication.
The Bachelor of Science

The B.S. programs are recommended for students contemplating graduate study and for those interested in research positions in colleges and universities or in industrial, governmental, or medical research laboratories.

Food and Nutrition

In addition to the requirements for the B.A. degree emphasizing food or nutrition, the following courses must be completed:

22M:2  Mathematical Techniques I  3 s.h.
22M:3  Mathematical Techniques II 3 s.h.
22M:20  Elementary Functions 3 s.h.
22M:25  Calculus I  4 s.h.
25:1  College Physics 4 s.h.
29:2  College Physics 4 s.h.
4:130  Elementary Physical Chemistry for the Life Sciences 3 s.h.
or
99:140  Experimental Biochemistry 3 s.h.

Home Economics Education

Graduates can enter the careers described for the B.A. degree. The B.S. program enables students to obtain greater depth and breadth in the natural and social sciences. In addition to the courses listed for the B.A. degree, the following are required:

4:7  General Chemistry I  3 s.h.
4:8  General Chemistry II 3 s.h.
4:9  General Chemistry Laboratory 2 s.h.
A course in statistics 3 s.h.
Two courses from the natural sciences and/or courses numbered 100 or above in anthropology, economics, psychology or sociology 6-8 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. Required:

17:81  Textile Fibers 4 s.h.
17:181  Textile Dyes, Finishes and Detergents 4 s.h.
17:182  Textile Analysis 3 s.h.
17:183  Textile Engineering 3 s.h.
17:184  Textile Quality Control 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.
22M:3  Mathematical Techniques II 3 s.h.
22M:20  Elementary Functions 3 s.h.
22M:25  Calculus I  4 s.h.
29:1  College Physics 4 s.h.
29:2  College Physics 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, the 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 3.3 in all home economics courses, and at least 12 semester hours completed in home economics. Honors work 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 or Honors Thesis and an oral examination are required.

The Graduate Program

The demand for well qualified professional home economists far 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 enables students to obtain depth through specialization 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 thesis plan is recommended for students preparing for teaching and research in colleges and universities, for positions in industry, 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.

To be admitted unconditionally, the student must have an overall grade-point average of 2.8 with 3.0 in the area in which he is to be the major interest in graduate study.

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 at least 15 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 area of major work.

All students in the M.A. and M.S. programs are required to complete 17:200 Seminar: Home Economics Research. Those in the thesis program complete 17:291 Thesis.

Design and Housing

Graduate study in design and housing may be planned as a specialized program in interior design or textile design or as a more general program including a wider variety of courses. Applicants to this program must present a portfolio prior to admission. A variety of career opportunities is available to the graduate student in design and housing. These include college teaching, interior design, textile design, historic preservation and restoration, and positions in business and industry.

Required (depending on previous coursework):
17:156  Survey of Modern Interiors 2 s.h.
17:250  Seminar: Design and Housing 2 s.h.
17:269  Research: Problems in Design and Housing 2-4 s.h.
17:290 Seminar: Home Economics Research 2 s.h.
One course in art history 3 s.h.
One course in studio art 3 s.h.

Courses for interior design specialization:
17:154 Interior Design: Principles and Practices III 3 s.h.
17:135 Survey of Traditional Interiors 4 s.h.
One course in textile design 3 s.h.
One course in housing 3 s.h.

Courses for textile design specialization:
17:160 Textile Design: Printing and Dyeing 3 s.h.
17:162 Textile Design: Basic Weaving 3 s.h.
17:164 Textile Design: Forms and Fibers 3 s.h.
One other course in textile design 3 s.h.

Family Development
The graduate student gains both psychological and sociological perspectives in understanding the family. Graduates work with agencies concerned with the family or prepare for college and university teaching.
Required:
17:118 Sexuality and the Family 3 s.h.
17:212 Seminar: Family Dynamics 3 s.h.
17:213 Theory in Family Development 3 s.h.
17:219 Research Problems in Family Studies 3 s.h.
17:290 Seminar: Home Economics Research 2 s.h.
17:106 Child Development 3 s.h.
A course in statistics 3 s.h.

Food and Nutrition
Graduates work in emphasis foods, nutrition, or nutrition education. Graduates qualify for positions in educational institutions, business, industry, government, and the health field. Applicants need background courses in foods, nutrition, general and organic chemistry, mathematics, physiology, and microbiology.
Required:
17:134 Experimental Food I 3 s.h.
17:238 Seminar: Food 2 s.h.
17:239 Research: Problems in Food and Nutrition 2 s.h.
17:241 Seminar: Nutrition 2 s.h.
17:290 Seminar: Home Economics Research 2 s.h.
225-101 Biostatistics 3 s.h.
17:143 Introduction to Statistical Methods 3 s.h.
99:120 The Chemistry of Biological Materials 3 s.h.
99:130 Metabolism 3 s.h.

Additional requirements for food specialization:
17:135 Experimental Food II 3 s.h.
61:197 General Microbiology 4 s.h.

Courses for Nutrition Education Specialization (M.A.):
17:124 Nutrition Work with Children 3 s.h.
17:145 Advanced Nutrition 3 s.h.
17:146 Seminar: Nutrition 2 s.h.

17:131 Educational Psychology 3.4 s.h.
17:143 Introduction to Statistical Methods 3 s.h.
99:120 The Chemistry of Biological Materials 3 s.h.

Home Economics Education
The graduate student’s program in home economics education may be planned for depth in one specialization of home economics or for breadth in the whole of home economics. Graduates are prepared for positions in educational institutions at all levels, home economics extension service, social agencies, and business. Applicants must have completed requirements for a teacher’s certificate.
Program Requirements:
17:223 Seminar: Readings in Home Economics Education 2 s.h.
17:229 Research Problems: Home Economics Education 3 s.h.
17:290 Seminar: Home Economics Research 2 s.h.
17:143 Introduction to Statistical Methods 3 s.h.

Textiles and Clothing
This program prepares students for careers in merchandising, textile research, teaching, extension service, and communication.
Required:
17:279 Research: Problems in Clothing 3 s.h.
17:280 Seminar: Problems in Textiles 3 s.h.
17:290 Seminar: Home Economics Research 2 s.h.
17:143 Introduction to Statistical Methods 3 s.h.

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 nonthesis and requires written and oral comprehensive examinations. Graduates obtain a home economics teacher’s certificate with vocational approval. Applicants must have a bachelor’s degree in home economics, a minimum grade-point average of 2.7, and be admitted to the M.A.T. program in the College of Education.
Twenty semester hours of graduate coursework in education and at least 14 semester hours of graduate work in home economics are required. For certification, the student must have completed (at the undergraduate and/or graduate level) a course in American politics or American government and two courses in each of the following areas: design and housing, family development, food and nutrition, family economics and home management, and textiles and clothing.
Required are:
17:131 Curriculum: Home Economics 3 s.h.
17:128 Evaluation: Home Economics 2 s.h.
17:131 Educational Psychology 3 s.h.
78:125 Materials: Home Economics 3 s.h.
76:191 Observation and Laboratory Practice in the Secondary School 12 s.h.
A course in philosophy or history of education 2 s.h.
Certification-Only Program
Students with the B.A. or B.S. degree in home economics may enroll in the certification program in order to meet requirements for teaching vocational home economics in secondary schools. Courses for this program are selected according to the student’s background and professional goals. See "College of Education."

Financial Awards
Several awards recognize students for their outstanding qualities and performance. The Outrines N. Writing Award is given to the recognize excellent written work completed in home economics courses. The Sophomore Book Award recognizes the sophomore home economics major with the highest grade-point average. The Margaret Foster Hoff Award is a full-tuition scholarship given to a student for her/his senior year, and the Myrna Lee Sperling Memorial Award is given to an outstanding home economics senior.

Two awards are for graduate students. The Mary Campbell Tow Scholarship is given to a student beginning graduate study. The other scholarship is provided by the Iowa Home Economics Association. A limited number of assistantships are available to graduate students.

Courses
Primary for Undergraduates
17-05 Growth and Development of the Young Child 3.s.h.
Growth and development of young children, emphasis on basic underlying growth and change.
17-21 Introductory Food Study 3.s.h.
Basic principles in preparation of food products.
17-41 Contemporary Nutrition 3.s.h.
Socio-psychological and environmental aspects of nutrition; basic principles of nutrition education.
17-58 Design for the Home 3.s.h.
Applications of design principles to selection and arrangement of residential interiors, furnishings, fabrics, and studio problems; on-art background needed.
17-72 Introduction to Interior Design 3.s.h.
Study course to develop visual communication skills for interior design including color theory, perspective, computer graphics, and principles of design. Prerequisite: 17-58.
17-74 Interior Design: Principles and Practices I 3.s.h.
Planning of dwellings and their furnishings considering social, psychological, physical, economic, and aesthetic factors. Prerequisite: Art 103 or 113, 17-05, 17-21, 17-30, 17-32, or consent of instructor.
17-70 Introductory Clothing Construction 3.s.h.
Clothing construction methods, pattern alterations, flat pattern design.
17-71 Intermediate Clothing Construction 3.s.h.
Clothing construction using a variety of patterns, designs and techniques. Prerequisite: 17-70 or consent of instructor.
17-72 Clothing Design and Selections 3.s.h.
Principles of design applied to current fabrics, influence of culture and environment on clothing; process of clothing selection.
17-80 Introduction to Textiles 3.s.h.
Textiles and their properties; fabric characteristics and finishes.
17-81 Textile Fibers 4.s.h.
Chemical and physical properties of natural and man-made fibers; yarn structures and fabric constructions; introduction to textile dyestuffs and finishes. Prerequisites: Chemistry 477 and 478.

For Undergraduates and Graduates
17-108 Basic Aspects of Aging 2.0-4.s.h.
Physiological, psychological, sociological, and economic problems of aging. Emphasis on current governmental, community, and organizational efforts to meet needs of older people.
17-110 Sensitivity to Children 3.s.h.
Goals, methods, and principles of child care; child development; socialization; and growth of children from birth to 18 years; observations of and interaction with young children.
17-111 Management of Family Resources 3.s.h.
Philosophy, goals, and principles of home and family management; use of time, energy, and other resources.
17-112 Family Economics 3.s.h.
Principles of family financial planning. Prerequisite: Economics 385 or consent of instructor.
17-115 Marriage and Family Interaction 3.s.h.
Contemporary American marriage and family relationships, including study of mass selection, marriage, and family interaction. Prerequisite: Psychology 111 or Sociology 211 or consent of instructor.
17-116 Parent-Child Relationships 3.s.h.
Organizational and application of research in child rearing and parent-child relations.
17-117 Parent-Child Relationships in Elementary Family 3.s.h.
Synthesis and application of research related to parent-child relations in elementary family relationships.
17-118 Parent-Child-Teacher Relationships 3.s.h.
Development of the teacher-pupil relationship which may occur between the teacher, parent, and student.
17-121 Human Sexuality 3.s.h.
Exploration of psychological and sociological aspects of human sexuality. Same as Nursing 98.111, Social Work 42.111, Education 1C.111. Will not meet home economics core requirements.
17-122 Sexuality and the Family 3.s.h.
Study of sexuality as it applies to various family development stages. Prerequisites: 17-111, or consent of instructor.
17-125 Directed Studies in Family Development 3.s.h.
Individual problems for advanced undergraduate and graduate. Prerequisite: consent of instructor.
17-130 Methods: Home Economics 3.s.h.
Philosophy, materials and methods in home economics. Required for home economics electron and vocational approval. Same as Education 70.122.
17-131 Curriculum: Home Economics 3.s.h.
Principles of curriculum planning; factors influencing home economics curriculum for various programs. Required for home economics electron and vocational approval.
17-147 Interior and Methods in Family Life Education 3.s.h.
Principles, philosophy, materials and methods of family life education curriculum. Family education, elementary, junior high, high school, and adult education. Same as Education 75.126.
17-148 Nutrition Work with Children 3.s.h.
Child nutrition, feeding and feeding techniques used in nutrition education of children. Prerequisites: 17-41, or consent of instructor. Same as Education 70.102.
17-150 Curriculum: Home Economics 3.s.h.
Current issues, developments and trends; application to individuals and families. May be repeated for credit. Same as Business 60.195.
17-157 Organization and Administration of Cooperative Programs 3.s.h.
Objectives, procedures, and organization of vocational, adult, distributive, and multi-occupational programs. Required for master certificate of adult education, distributive education programs, and cooperative programs. Same as Education 75.133.
17-158 Evaluation: Home Economics 3.s.h.
Applications of measurement and evaluation principles and procedures in home economics. Required for home economics electron and vocational approval.
17-160 Directed Studies in Home Economics Education 3.s.h.
Individual problems for advanced undergraduate and graduate. Prerequisite: consent of instructor.
17-161 Food Service Study 3.s.h.
Food components and their use in preparation and service. Prerequisite: Chemistry 115I. Credit 1-3. Same as Food Science 115I.
17-162 Food Service Study Laboratory 2.s.h.
Laboratory work in food preparation to accompany 17-161. Prerequisite: Chemistry 4211. Complementary: 17-161.
17-163 Food Service Study Laboratory 3.s.h.
Management of resources to meet physiological, psychological, and economic needs of infant, family, groups. Prerequisites: 17-151 or 17-315; and 17-312 and 17-411 or 17-412.
17-164 Experimentation in Food 3.s.h.
Journalism

17:241 Seminar: Nutrition
3 a.h.
Critical review of current periodical literature in nutrition. Prerequisite: 17:141, or consent of instructor.

17:245 Seminar: Design and Housing
2 a.h.
History and philosophy of interior design, textile design, and housing; readings, reports, and discussion of current literature. Prerequisite or completion: 17:290.

17:255 Seminar: Historic Housing and Interiors
2 a.h.
Methodology and procedures in historic renovation and preservation; readings, reports, and discussion of current literature. Prerequisite: consent of instructor.

17:290 Studio Workshop in Fiber
4 a.h.
Fiber projects in a specific medium; emphasis on aesthetic direction; related readings. Prerequisites: 17:186, 17:192, 17:164 and consent of instructor.

17:288 Research: Problems in Design and Housing
arr.
Individual research problems for advanced students. Prerequisites or completion: 17:290.

17:293 Clothing for the Physically Handicapped and the Aged
3-5 a.h.
Problems in satisfying clothing needs; solutions to some problems; review of research; work of selected agencies; analysis of specially-designed clothing. Summer sessions only.

17:276 Readings: Clothing
arr.
Readings, reports, and discussion of current literature in clothing. Consent of instructor.

17:279 Research: Problems in Clothing
arr.
Individual research problems for advanced students. Prerequisite or completion: 17:290.

17:289 Instrumental Analysis of Textile Materials
4 a.h.
Comparative analysis of fibers and fabric properties and the study of methods for scientific evaluation of these properties.

17:288 Readings: Textiles
arr.
Readings, reports, and discussion of current literature in textiles.

17:298 Research: Problems in Textiles
arr.
Individual research problems for advanced students. Prerequisite or completion: 17:290.

17:295 Seminar: Home Economics Research
arr.
Methods and techniques of research in home economics and closely allied fields. Prerequisite or completion: a course in statistics, or consent of instructor.

17:291 Thesis
arr.
Master's degree culminating.

17:293 Workshop on Aging: Social Gerontology for Home Economists
3 a.h.
Characteristics, attitudes, and behavior of older people: physical, social, economic, and social problems and needs; current legislation and community resources. Summer sessions only.

Hospital and Health Administration
See "College of Medicine."

Italian
See "French and Italian."

Journalism

School director: Kenneth Stick


Undergraduate Programs
Wherever a journalism course is offered, it will be in a vital role requiring extensive knowledge of the diversity of human experience. Competent journalism must understand themselves, their relationship to the events they report, the mechanics of their profession and the effects of their work on the audience, writer, 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 courses that three-quarters of their coursework outside the School, and are required to develop a second major, or the equivalent of one, to ensure that each has an array of special professional competencies.

The School offers undergraduate students a choice of three emphases—journalism, mass communication or communication. All have these common basic requirements, or foundations courses:

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<tr>
<th>Course</th>
<th>Credits</th>
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<tr>
<td>Communication and Communication Systems</td>
<td>3 a.h.</td>
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<tr>
<td>Legal and Ethical Foundations of Communication Systems</td>
<td>3 a.h.</td>
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<tr>
<td>Cultural and Historical Foundations of Communication Systems</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>Communication Systems Theory and Research</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>Introduction to Journalism and Mass Communication</td>
<td>3 a.h.</td>
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</tbody>
</table>

Total 15 a.h.

(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 30 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 coursework in several departments.

Additional requirements for the B.S. degree are either 26-104 Introduction to Philosophy of Science or 26:103 Introduction to Logic, and one of the following:

A full B.S. major in a natural or social science;

A 24-semester-hour concentration in the natural or social sciences, beyond university core requirements; or

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 final 45 semester hours of his or her bachelor's program in journalism, the student must design a plan of study and present it for advisor 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:

19:109 Introduction to Journalism and Mass Communication 3 s.h.
19:112 News Reporting and Writing 4 s.h.
19:114 News Processing 3 s.h.
19:116 Advanced Reporting 3 s.h.

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 organized and staffed by advanced students produce publications using various technologies, such as print, videotape, audio tape, still 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. Undergraduates, graduate students and faculty members of the school comprise 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 their own basic 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:

19:122 Mass Communication Laboratory II: Publicizing and Media 2 s.h.
19:124 Mass Communication Laboratory III: Media Production 3 s.h.
19:126 Mass Communication Laboratory IV: Media Production Management 4 s.h.
Approved communication skills/labore-

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 consideration of the effects, responsibilities and significance of the media. It prepares students 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 emphasis in journalism and mass communication 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 in 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: Principles and Practice 5 s.h.
19:245 Specialized Reporting or Editing, or appropriate sequence of related graduate courses approved by the adviser 7 or 8 s.h.
Electives in mass communication, including courses in other departments, consent of adviser 16 or 17 s.h.
19:251 Master’s Research 3 s.h.
Final examination, last enrollment period

For students with academic or professional experience in communication and journalism, the M.A. in professional journalism requires:

19:201 Master’s Seminar 3 s.h.
Electives in mass communication (consent of adviser) 9 s.h.
Electives in other departments (consent of adviser) 15 s.h.
19:251 Master’s Research 3 s.h.
Final examination, last enrollment period

Communication and Mass Communication Emphasis

This program focuses on communication phenomena, and particularly on theory and methodology. Graduate of this program may petition for admission to the school’s doctoral program in mass communication.

Requirements for the M.A.:

19:201 Master’s Seminar (section 2, two semes-
ters) 4 s.h.
19:205 Junior Practicum (two semesters) 6 s.h.
Electives in communication and mass communication and in other departments (consent of adviser) 17 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 communi- cation, 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 com- munication, 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 and facilitates inquiry into communication problems by faculty members and by graduate and undergraduate students, via diverse approaches—philosophical, systems design, historical, legal, behavioral, literary. Center services include consultation, training, publication in appropriate outlets, assis- tance in obtaining financial support for projects and assistance in computer use and data analysis. Another area of Center activity involves the design, development and application of simulations and games for communication instruction and research.

Other Special Facilities:

In the Communications Center the School has specialized labora- tories for photography, typography, audiotaping, videotaping, typing, copy preparation and print production. Many students use the newsroom of the University student newspaper, The Daily Iowan, as a professional laboratory. The School also has its own Resource Center and Gallery.

Courses

19:2513 Master’s Research (section 2, last period of enrollment, M.A. thesis) 3 s.h.
Final examination, last enrollment period

19:1043 Technological and Economic Foundations of Communication Systems 3 s.h.
Traces the development of the technologies and economic factors that underlie the various communication systems of which modern societies consist, and explores the major problems and opportunities involved in their further development, particularly with respect to the globalization of communication systems.

19:1053 Cultural and Historical Foundations of Communication Systems 3 s.h.
Traces the history of mass communication and as a designer of communication courses; uses historical framework to analyze various social, political and cultural environments of communication and the functions of communication systems within those environments.

19:1073 Visual Communication

Visual communication is media considered as an interactive process shared for individual perception and experience, cultural perspective and technological change. Emphasis is placed on developing an understanding and critical awareness of contemporary visual media, with reference to theories of visual perception, cultural differences and the historical development of graphic design and fine and applied picture imagery. No prerequisite. Offered once a year.

19:1063 Communication Systems Theory and Research

A description and critical examination of the development of research on the effects of mass communication will be pursued using the varied studies in a variety of research approaches to illustrate subsequent examples of "output" investigations. The interdisciplinary nature of American communication research research, the questions asked about communication effects, the methods used to answer these questions and the findings derived by the particular methods employed.

19:1093 Introduction to Journalism and Mass Communication 1-2 s.h.
Broad overview of journalism and mass communication with an emphasis on writing for news media. Serving course for the three laboratory courses, Journalism, Mass Communication and Journalism. Includes focuses lecture and discussion of news, news reports and news media, and the reporter as language user and writer. Also includes critical look at news media, their role and their operation. Laboratory sessions in journalism and mass communications.

19:1143 News Processing

A broad introduction to the study of copy editing and headline writing and their legal considerations. Preparations of offbeat material for publication, including cutting material for printed media, particularly newspapers with some comparative understanding of other media; relationship of editorial work to the legal ramifications and to the ethical considerations of the professional. No prerequisite. Offered once a year.

19:1153 Advanced Reporting

Final course in journalism laboratory sequence. Depth reporting projects of publish- able quality with topics ranging from government and society to business and science. Includes extended writing projects, reporting and writing methods and strategies. No prerequisite. 19:112 and 19:114.

19:1233 Mass Communication Laboratory III: Production Workshop

19:1343 Mass Communication Laboratory III: Media Production 5-4 s.h.

19:1353 Media Production Management

A broad introduction to the Mass Communications major are listed in the graduate school catalog as courses or of the mass student, each class is a two-semester sequence, one course each includes the instruction in basic and advanced techniques, principles of economics, the use of research and the study of the theory. Offered in the Fall semester only, each course is designed to complement the student's course work in the previous semester, and to provide an opportunity for advanced study in the field. No prerequisite. Offered once a year.

19:1383 Media Production

Theories of communication and human behavior applied to advertising copy and layout, television situations designed to stimulate creative expression.

Notes

- The School of Communication at the University of Iowa is an interdisciplinary institution that prepares students for careers in various fields, including university teaching, news communication, international communication, and more.
- The school offers a Master's Research course for M.A. theses, with a final examination at the end of the last enrollment period.
- The Technological and Economic Foundations of Communication Systems course traces the development of technologies and economic factors that underlie communication systems.
- Cultural and Historical Foundations of Communication Systems explores the history of mass communication from a cultural and historical perspective.
- Visual Communication focuses on contemporary visual media and their influence on perception and experience, cultural perspective, and technological change.
- Introduction to Journalism and Mass Communication provides a broad overview of the field, emphasizing writing for news media.
- News Processing introduces copy editing and headline writing, considering both legal and ethical considerations.
- Advanced Reporting is the final course in the journalism laboratory sequence, focusing on in-depth reporting projects.
- Mass Communication Laboratory III: Production Workshop and Media Production Management courses provide practical training in production and management.
- Media Production offers an introduction to the techniques and principles of media production.
- The school offers courses in various aspects of communication, including news processing, advanced reporting, and media production, among others.
- The school's approach is interdisciplinary, with courses that integrate various fields such as history, law, and ethics into the study of communication.
108/105 Russian Literature 3 s.h.
108/106 Russian Culture 3 s.h.
108/108 Introduction to Iranian Literature 3 s.h.
108/109 Introduction to Russian Literature 3 s.h.
108/110 Russian Drama in Translation 3 s.h.
108/113 Soils as Comparative Literature 45:159. Speech and Drama—Art 347:139.

Literary Forms and Genres
108/111 Great Drama in Translation 3 s.h.
108/112 Great Drama in Translation 3 s.h.
108/113 Russian Drama in Translation 3 s.h.
108/114 Russian Drama in Translation 3 s.h.
108/115 Russian Drama in Translation 3 s.h.
108/116 Russian Drama in Translation 3 s.h.
108/117 Russian Drama in Translation 3 s.h.
108/118 Russian Drama in Translation 3 s.h.
108/119 Russian Drama in Translation 3 s.h.
108/120 Russian Drama in Translation 3 s.h.
108/121 Russian Drama in Translation 3 s.h.
108/122 Russian Drama in Translation 3 s.h.
108/123 Russian Drama in Translation 3 s.h.

Italian Literature
108/124 Italian Literature 3 s.h.
108/125 Italian Literature 3 s.h.
108/126 Italian Literature 3 s.h.
108/127 Italian Literature 3 s.h.
108/128 Italian Literature 3 s.h.
108/129 Italian Literature 3 s.h.
108/130 Italian Literature 3 s.h.
108/131 Italian Literature 3 s.h.
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108/133 Italian Literature 3 s.h.
108/134 Italian Literature 3 s.h.
108/135 Italian Literature 3 s.h.
108/136 Italian Literature 3 s.h.
108/137 Italian Literature 3 s.h.
108/138 Italian Literature 3 s.h.
108/139 Italian Literature 3 s.h.
108/140 Italian Literature 3 s.h.

Modern Literature
108/141 Modern Chinese Literature 3 s.h.
108/142 Modern Chinese Literature 3 s.h.
108/143 Modern Chinese Literature 3 s.h.
108/144 Modern Chinese Literature 3 s.h.
108/145 Modern Chinese Literature 3 s.h.
108/146 Modern Chinese Literature 3 s.h.
108/147 Modern Chinese Literature 3 s.h.
108/148 Modern Chinese Literature 3 s.h.
108/149 Modern Chinese Literature 3 s.h.
108/150 Modern Chinese Literature 3 s.h.
108/151 Modern Chinese Literature 3 s.h.
108/152 Modern Chinese Literature 3 s.h.

African, Asian, and Latin American Literature
108/153 African, Asian, and Latin American Literature 3 s.h.
108/154 African, Asian, and Latin American Literature 3 s.h.
108/155 African, Asian, and Latin American Literature 3 s.h.
108/156 African, Asian, and Latin American Literature 3 s.h.
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108/197 African, Asian, and Latin American Literature 3 s.h.
108/198 African, Asian, and Latin American Literature 3 s.h.
108/199 African, Asian, and Latin American Literature 3 s.h.
108/200 African, Asian, and Latin American Literature 3 s.h.
108/201 African, Asian, and Latin American Literature 3 s.h.
108/202 African, Asian, and Latin American Literature 3 s.h.
108/203 African, Asian, and Latin American Literature 3 s.h.
Library Science

Director of School: Frederick Wiantzen

Faculty: professors: Eva Jane Grove, Frederick Wiantzen; associate professor Carl Oser; associate and visiting professors: Louise L. Newman; visiting professors: Millicent Laughton, James McKeague, Robert Smith, Terry Veitch; assistant librarian Edward Nelson; visiting librarian Luis Martinez

Affiliated Faculty: Mary Ann Bauer, Oral O. Baxter, G. Albert Carlson, Leslie W. Dering

Degree offered: M.A.

The School of Library Science offers a program of basic professional preparation for careers in all types of libraries—public, school, academic, and special. It seeks to recruit and prepare librarians, to provide public service and to contribute to the advancement of librarianship through research. In accordance with these goals, the following objectives have been defined:

Instructional Objectives

To introduce students to a basic understanding of the history and theory of librarianship, the changing role of the library in today's society and the library's importance in the communication process.

To help students develop a philosophy of librarianship which includes a commitment to the cause of intellectual freedom and to the ideal of free dissemination of information; a professional attitude toward the librarian's role as facilitator between user and material; and a determination to improve the quality of library service in response to the needs of the people to be served.

To provide students with a foundation in the techniques and procedures of effective library service (i.e., the selection, acquisition, organization, storage, retrieval, and dissemination of information).

To familiarize students with bibliographic techniques and sources of information in a broad range of subject fields and media formats.

To introduce students to management theory as it applies to library administration and to prepare the student to assume professional responsibilities of identifying needs, setting goals, analyzing problems and formulating solutions.

To provide students with opportunities for clinical library experience under supervised direction and the pursuit of related courses of study to meet special career needs.

To increase awareness of the contributions of other disciplines to librarianship, a critical understanding of the role of research in the advancement of the profession, and the importance of continuous professional growth.

Public Service Objectives

To offer all library personnel and library trustees opportunities for continuing education in advancement of the profession and update their awareness of current developments in library operations and services.

To provide consulting services to individuals, libraries and organizations in order to promote better library service for the citizens of Iowa and surrounding areas.

To participate in professional organizations at local, state, regional and national levels in the pursuit of common goals within the profession.

Research Objectives

To engage in systematic and continuing research on library problems and areas related to library service which advance both the theoretical and practical knowledge of librarianship.

To give emphasis to research which directly supports the instructional program of the School of Library Science or which may have special relevance to library service in the State of Iowa.

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

Professional preparation for careers in all types of libraries is provided by the school's Master of Arts program, accredited by the American Library Association.

The school also offers a non-degree graduate program for certification in school librarianship. Its graduates hold 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 33 semester hours of graduate credit with a minimum grade-point average of 2.5. In addition, the student must pass a 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.
21:151 Reference I
21:152 Cataloging and Classification
21:153 Selection of Library Materials

Type of library course (one required) 3 s.h.
21:231 The Public Library
21:232 The College and University Library
21:233 School Media Center Administration

Bibliography course (one required) 3 s.h.
21:241 Bibliography of the Humanities
21:242 Bibliography of the Social Sciences
21:243 Bibliography of the Sciences

Electives 18 s.h.

Students are expected to take their elective hours in library science courses. However, if a student has had extensive undergraduate coursework in library science, or if career objectives indicate, and with the advisor’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 summers only, a minimum of four summer sessions.

Public Library Work
required courses of public librarians is to design innovative service programs to reach those segments of the population now unserved, 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
21:231 The Public Library

Suggested electives
21:213 Library Services to Adults
21:222 Multi-Media Concepts in Libraries
21:246 Introduction toInformation Science
21:251 Advanced Reference
21:252 Advanced Cataloging
21:263 Problems in Library Management

Additional bibliography courses

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 teaching programs, 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
21:233 School Media Center Administration
7V:101 Operation of Audio-Vision Equipment
7V:105 Selection and Utilization of Educational Media (or equivalent audio-visual course)

Suggested electives
21:123 Children’s Literature
21:124 History of Children’s Books
21:126 Literature and Storytelling for Children
21:195 Literature for Adolescents
21:222 Multi-Media Concepts in Libraries
21:234 Library Services to Children and Young Adults
21:251 Advanced Reference
21:262 School Media Center Problems
7B:300 Elementary Curriculum
7B:281 Junior High School and Middle School Curriculum
7B:291 Secondary School Curriculum

College and University Library Work
The academic library, whether in a community college or a university, provides service to students, faculty and staff relating to their information, education and research needs. Management or supervisory responsibility is often required. Special competencies may be called for, such as a subject or language specialty or an activity specialty (classification and indexing, information systems, etc.).

Required courses
Core courses
bibliography course
2:232 The College and University Library

Suggested electives
21:251 Introduction to Information Science
21:252 Advanced Reference
21:254 Advanced Cataloging
21:263 Problems in Library Management
21:264 Medical Librarianship and Bibliography
Additional bibliography courses
22C:106 Introduction to Programming with PL/I
22C:107 Computer Programming with PL/I
7D:207 Computer Applications in Education
Work in Special Libraries
Special libraries function in such settings as government agencies, industrial firms, hospitals, museums and publishing companies. In addition to management skills, the special librarian often needs a subject specialty.

Required courses:
C
21:230 Special Libraries

Suggested electives:
21:246 Introduction to Information Science
21:251 Advanced Reference
21:252 Advanced Cataloging
21:254 Advanced Bibliography
21:263 Problems in Library Management
21:264 Medical Librarianship and Bibliography
21:282 Practicum in Libraries
22C:106 Introduction to Programming with PL/I
22C:107 Computing with PL/I

Certification in School Librarianship
Students who desire to become school librarians may fulfill certification requirements within the M.A. program, or they may pursue the non-degree certification program described below. The certification program, a 30-semester-hour sequence, accepts both undergraduate and graduate coursework, and does not require a foreign language for admission. The student must hold an elementary or secondary school teaching certificate, as specified by the State Department of Public Instruction. All candidates for certification must complete the following course requirements:

Required courses: 15 s.h.
21:151 Reference I
21:152 Cataloging and Classification
21:153 Selection of Library Materials
21:233 School Media Center Administration
Three hours of audio-visual coursework

Elective courses: 15 s.h. Students are encouraged to take a curriculum course for the grade level (elementary, junior high or high school) at which they expect to work. Other suggested courses: 21:123 Children’s Literature, 21:124 History of Children’s Books, 21:126 Literature and Storytelling for Children, 21:193 Literature for Adolescents, 21:222 Multi-Media Concepts in Libraries, 21:234 Library Services to Children and Young Adults, 21:282 Practicum in Librarianship. With consent of his or her adviser, the student may select other library science courses.

Joint Program in Business Administration and Library Science
Today’s professional librarian faces ever-increasing demands for knowledge and expertise in the functional areas of administration and management. In addition to understanding the principles of library science, the librarian, whether in an academic or public setting, is discovering the importance of understanding and applying the principles for effective management of complex organizations. In order to offer students an opportunity to gain a solid understanding of the problem-solving techniques of each area, the College of Business Administration and the School of Library Science have developed a joint program which leads to two degrees—the Master of Business Administration (M.B.A.) and the Master of Arts (M.A.) in library science.

To enroll in the joint program the student must apply to and be accepted by both Graduate Studies in Business and the Library School. The joint program enables the student to apply six semester hours of business electives toward the M.B.A. in library science and nine hours of library science toward the M.B.A. A minimum of 60 hours must be completed in order to receive the two degrees. Students not having previous coursework in business administration may be required to complete up to 72 hours in the joint program.

Facilities and Resources
Quarters for the School of Library Science in the south wing of the University’s Main Library provide well-planned facilities for the varied instructional and research activities of the school. Included are laboratories for bibliography, cataloging and multi-media study, as well as a separate departmental library science library. A teletype machine provides direct communication with the University’s IBM 3050/85 computer, and a teletype (TWN) connects the school with a network of 20 academic and public libraries in the state.

All of the resources of the University Libraries are available to students and faculty of the school. The system contains more than 1.8 million volumes in the Main Library and its 12 departmental branches.

In addition to the University Libraries, students have access to a variety of libraries in Iowa City and nearby communities for clinical and laboratory purposes: the State Historical Society Library in Iowa City; the Iowa City and Cedar Rapids public and school libraries; the Cor, Cornell and Grinnell college libraries; and, by arrangement, the Herbert Hoover Presidential Library in West Branch, Iowa.

Financial Assistance
The School of Library Science annually awards several tuition scholarships, as well as quarter-time graduate assistantships. Prospective students are urged to apply for these awards before March 1. Students interested in part-time employment should contact the libraries of the Iowa City area.

Admission Requirements and Procedures
Scholaric requirements for admission to the M.A. program include:
A baccalaureate degree from an accredited college or university, with a minimum grade-point average of 2.5 on a 4.0 scale, and at least 15 semester hours of study in the liberal arts and sciences;
One year of college credit in a foreign language with a grade of C or better or an equivalent level of achievement;
Satisfactory scores on the Graduate Record Examination Aptitude Test.

Personal qualifications and aptitude for library work are assessed by means of letters of recommendation and a personal interview with the director of the school and a member of the faculty. Because of the large number of applications, the school cannot
There are many indications that such organizing principles exist in language. Children normally learn to use their native language before they enter school, and without much direct instruction. People can speak and understand sentences they have never heard before. All languages have several ways of saying the same thing and all have sub-linguistics. All languages change through time. Damage in a particular part of the brain may be related to a particular type of linguistic problem, whatever the language. All languages are systems with some unique properties, some universal properties, and some properties shared with other languages which may or may not be historically related.

Linguists do not attempt to learn many languages. Rather, they consider the languages of the world as data to be analyzed by common principles.

Linguistics is a science with many laboratories. One linguist’s laboratory may be his or her mind and a notebook and paper. Another may work with acoustical equipment. Others need computers. Some go into seldom visited places to study, describe, and analyze little-known languages which may be in danger of extinction. Some go into their own communities to study the relationship between language variation and socio-economic structure, or race, or sex. Still others, interested in language change, spend time studying ancient languages.

Linguistics is not limited to scientific research for its own sake. Linguists may teach English as a foreign language. They may help design school programs which are relevant for Chicano, blacks and Indians. They may help intelligence and achievement test-makers avoid discriminations against non-middle-class white Americans, or help librarians use computers to manage massive amounts of information. They may work with speech clinicians to retrain people with linguistic disabilities.

Undergraduate Program

Because language is the medium of informational, emotional and analytic communication, yet can be analyzed scientifically, a major in linguistics is a liberal arts education.

High scores on verbal and quantitative aptitude tests are indicators of success in linguistics. Although few aspects of the field deal with numbers, it is very important to be able to reason logically and explicitly, and to be able to deal with formulations and abstract symbols.

From the standpoint of vocational goals, prospective linguists students should consider either pursuing their study through the M.A. in linguistics with a professional focus, or through the doctorate, or they should take a second major. Appropriate companion fields include foreign languages, English, anthropologies, sociology, speech pathology, phonology, mathematics, computer science, philosophy, and elementary, secondary and special education.

The Bachelor of Arts degree in linguistics prepares the student to do basic language analysis in syntax-semanticism (sentence word patterns and their relation to meanings) and phonology (sound patterns). Elective courses in a variety of sub-specialties enable each student to tailor a program to his or her own interests.

The major in linguistics requires 24 semester hours of work in the Department. It includes a general introduction, and courses in syntax, phonetics, phonology, methods of analysis and language history. Electives and an undergraduate seminar complete the program.

Graduate Programs

Emphasis in all graduate programs is on theory and research. Students interested in non-university careers may also take advantage of a number of courses in related linguistics or in other fields, either in connection with doctoral work or as a standard option of the M.A. program.

Master of Arts in Linguistics

All students take a required set of core courses followed by comprehensive examinations in phonology and syntax-semantics. Students choosing to write a thesis take at least nine semester hours of elective course work. Students choosing to take a degree without thesis must do a focus area (consisting of 12 hours of course work and a comprehensive examination) and take at least three semester hours of elective course work. The major purpose of the focus area is to qualify the student for immediate career opportunities. The focus may either be designed in advance by the student (subject to departmental approval), or be one of a set of pre-designated options (e.g. Teaching English as a Foreign Language). All electives must be chosen from an approved list furnished by the Department. Students without prior training in linguistics should expect either to take 33 hours of course work and write a thesis or to take 39 hours of course work. All students must have a minimum of 30 hours of graded credit to receive the degree, regardless of prior preparation.

Ph.D. in Cultural Anthropology and Linguistics

The Ph.D. in cultural anthropology and linguistics prepares the student for professional teaching and research in the linguistic and non-linguistic 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 context of the anthropology-linguistics doctoral program may be adjusted to accommodate an emphasis either in anthropology or linguistics, or it may be a balance of the two. The explicit requirements are:

- Acquisition of two appropriate research tools from a list which includes foreign languages, statistics, symbolic logic, and computer programming.
- Satisfactory completion of a basic series of courses in linguistics (courses in general linguistic theory, phonetics, grammatical analysis, phonological analysis and historical-comparative linguistics); and in anthropology (courses in anthropological history, theory or methods, social anthropology, social institutions and an ethnographic area); and
- Satisfactory completion of a series of interdisciplinary courses in language and culture, ethno-linguistic field methods, and ethno-linguistic theory.

Ph.D. in English with a Major in Linguistics

The program of study leading to the Ph.D. degree in English with major in English linguistics 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 study of English and/or American literature.
The linguistics area of the program is planned in consultation with the student's advisor. It is expected to include work in syntax, phonology and dialectology. Old English, Middle English, the structure of English, the history of the English language, and the teaching of English as a second language. An important part of the program is a semester of directed research—usually in the last year of coursework—in the structure of Modern English, the historical development of English, and the period of the history of the English language which corresponds to the literary period the student has chosen for study.

Literary study includes at least Beowulf, Chaucer, and Shake-speare, as well as a literary period of the student's choice. The student of English linguistics is encouraged to take at least one course in an older Germanic language and at least one additional course in Germanic or one of the other Old Indo-European languages.

The comprehensive examination for the degree includes the following areas: general linguistics, the structure of Modern English (including American dialects), the history of the English language, and the literary period elected.

The dissertation treats some topic in the history of English, in the structure of English at any stage of its historical development or in any of its dialects, or in applied English linguistics.

Special Facilities

The Department of Linguistics has an acoustics laboratory, consisting of an sound spectrograph, a studio-type tape recorder and an amsiometer chamber. There is also a remote typewriter terminal connected with the IBM 360/65 computer at the University computer center.

The departmental reading room functions to allow 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 conversations among students and faculty members. Students and faculty members also meet monthly in an informal colloquium to discuss research in which students and staff are engaged.

The department also has a psycholinguistic laboratory to provide experience in teaching English as a foreign language.

Departmental Financial Aids

Teaching assistantships and research assistantships are available to qualified graduate students. Application should be made by March 1 for the following academic year. Students applying for financial aid and admission concurrently should submit their GAT scores.

Courses

Special English Courses for Foreign Students: 105/10, 105/19: 097.

Primarily for undergraduates

105/10 English for Foreign Students

Training in spoken and written English for non-native speakers of English. Permission of department.

105/11 Language and Society

Correlations between social and linguistic behavior. Methods for discovering and describing significant sociolinguistic phenomena. History, educational and political implications of findings. Social Support course.

105/20 Elements of Linguistics


120/2/3 Basic Phonetics

Acquisition of the sound systems of language. Basic phonetic procedures. Basic linguistics to phonetics. Prerequisite: 120/215.

120/2/3 Basic Morphology


120/2/3 Basic Syntax

The nature of speech sounds. General principles, distinctive features theory, Types and ordering relations of phonological rules. Prerequisites: 120/215 or equivalent.

120/2/3 Elements of Phonology


125/2/3 Pronunciation


120/2/3 Introduction to Linguistics

Introduction to general Linguistics. Some topics in general Linguistics. Same as English 105/200 and 105/201.

120/2/3 Introduction to Language and Communication

Methods and research in area of interrelations between Linguistics and communication theory.

120/2/3 Language, Society & Education

Socially conditioned attitudinal language use; development of prescriptivism; linguistic influence of socioeconomic status, meaning of a "correct" language and dialects of a language. No prerequisites. Same as English 105/215.

105/215 Teaching English as a Foreign Language


120/2/3 Research Methods

Practical experience is seeking English as a second language under supervision. Prerequisites: 105/215.

120/2/3 Introduction to Phonetics

Anticsyntactics and sociolinguistic theory. Intensive practice in phonetic transcription.

120/2/3 Computer Analysis

Procedures described in the general framework for computer analysis: the phonetics-pronunciation analysis. Prerequisites: 105/200 or 120/215.

120/2/3 Phonological Analysis

Principles of phonological analysis in the framework of generative theory. Prerequisites: 120/200 or 120/215.

120/2/3 Linguistics Field Methods

Historical and descriptive language data in field; theory and practical problems; practical experience in extracting data from an informed. Prerequisites: 105/215, 105/216, 105/231.

120/2/3 Language Data Processing


120/2/3 Language Data Programming

English conceptualization of language analysis procedure: program construction. Same as English 105/215.

120/2/3 Historical and Comparative Linguistics


120/2/3 Historical Linguistics Theory


120/2/3 Descriptive Linguistics


120/2/3 Historical Linguistics Theory


120/2/3 Historical Linguistics Theory

Basic surveys of generative phonological theory. Prerequisites: 105/215.
Literature, Science, and the Arts

Philosophy, history, fine arts and the sciences, guide the discussion.

Undergraduate Major
A major in the Interdisciplinary Program is Literature, Science, and the Arts (LSA) 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 specialized 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.

Specific requirements for the major in the Interdisciplinary Program in Literature, Science, and the Arts (LSA) are in addition to the general requirements of the College of Literature:

LSA
15 a.h.
Natural sciences, social sciences
15 a.h.
Philosophy, religion, history
15 a.h.
Literature beyond core requirements
15 a.h.
Fine arts (excluding studio courses)
5 a.h.
Foreign language (one semester beyond the second year)
(20 credits of work in English literature may also be used to satisfy the requirement in literature)

Students considering a major in the Interdisciplinary Program in Literature, Science, and the Arts (LSA) should consult with the advisor before the end of the sophomore year

Honor
The degree of Bachelor of Arts with Honor 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 approval of the chairman of the Interdisciplinary Program in Literature, Science, and the Arts.

Courses
20:101 The Pursuit of Happiness
3-4 a.h.
Threats of Self-Destruction to various types of human experience (including Art, Science, Theological, Classical, Russian, and Modern), and the importance of human values in understanding these phenomena
20:102 The Good Society
4-2 a.h.
Men's and women's perspectives in formation and women's role in forming the Good Society
20:104 Values in the Contemporary World
3-4 a.h.
Modern problems in definition and choice of values, examined through writings of contemporary ethical theorists and novelists
20:105 Human Nature and the Impact of Science
3-4 a.h.
Relationship of scientific to social and moral thought. See also course 11:124
20:106 The Metaphysics of the Arts
2-4 a.h.
Interplay between art forms and other cultural patterns. Institutions and rituals, through close examination of creative and critical writings, specific works of art
20:107 Medieval Thought
3 a.h.
Library and social movements of modern Russia
20:108 Special Projects
1 a.h.

3-4 a.h.

2-4 a.h.

1-2 a.h.

3-4 a.h.

3-4 a.h.

1 a.h.

3-4 a.h.

3-4 a.h.

3-4 a.h.

2-4 a.h.
Undergraduate Program

The Division of Mathematical Sciences has a comprehensive undergraduate program in which students who seek a major in mathematical sciences may plan studies which will lead to (and may include) advanced work in one or more departments of the division.

The division offers 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 and which must include substantial work in at least one of the three departments. A number of suggested programs for completing this major are listed below.

The Department of Computer Science offers a major in computer science. See "Computer Science" below.

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:35 Engineering Calculus 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 COBOL
22C:10 Introduction to Computing with FORTRAN
22C:16 Introduction to Programming with PL/I
22C:17 Programming with PL/I
22C:18 Assembly Language Programming
22C:19 Computer with PL/I
22M:1 Basic Mathematical Techniques
22M:2-3 Mathematical Techniques I-II
22M:4 Modern Algebra
22M:7 Numerical Methods I
22M:10-11 Fundamentals of College Mathematics I-II
22M:15 Mathematics for the Biological Sciences
22M:16 Calculus for the Biological Sciences
22M:20 Elements of Economics
22M:25-26 Calculus I-II
22M:29 Computer Laboratory for Calculus and Linear Algebra
22M:33-35 Engineering Calculus I-II
22M:80 Theory of Functions
22M:81 Geometry for Elementary Teachers
22S:8 Quantitative Methods II
22S:25 Elementary Probability and Statistics
22S:80 Statistics
22S:102 Introduction to Statistical Methods

Except for students seeking a secondary teaching certificate, the seven courses must include two of these:

22C:116 Operating System Principles
22C:122 Advanced Computer Organization and Architecture
22C:123 Advanced Programming Language Concepts
22C:135 Introduction to Computation Theory
22C:145 Artificial Intelligence I
22M:100 Introduction to Ordinary Differential Equations
22M:118 Complex Variables
22M:170 Numerical Analysis: Nonlinear Equations and Approximation Theory
22M:171 Numerical Analysis: Differential Equations and Linear Algebra

or one of these:

22M:103-104 Foundations of Mathematics I-II
22M:110-111 Elementary Topology I-II
22M:115-116 Introduction to Analysis I-II
22M:120-121 Abstract Algebra I-II
22M:130-131 Theoretical Mechanics I-II
22M:131-132 Statistical Methods with Applications, Linear Statistical Models with Applications
22M:124 and 167 Introduction to Probability, Introduction to Stochastic Processes
22M:153-154 Introduction to Mathematical Statistics I-II
22S:177-178 Numerical Analysis for Actuaries, Graduates

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 one of the calculus sequences (22M:25-28 and 22M:35-38) 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 advisor and work out a program which reflects his or her mathematical interests. The requirements are flexible enough to show for changes in student's interests.

General Program

Unless a student has a strong interest in a special area in mathematics, a rather general program is suggested. This type of program should include 22C:17 Introduction to Computing with FORTRAN, preferably along with calculus during the freshman year. The program should also include courses such as 22M:30 Elements of Group Theory, 22M:55 Foundations of Topology and Linear Algebra, and 22M:100 Introduction to Ordinary Differential Equations.

Additional work, in particular the required 100-level course, should be taken in whatever area of mathematical sciences is of most interest to the student. Students considering employment in government or industry upon completion of the B.A. degree...
should consider 22C:17 Programming with PL/I and courses in numerical analysis, applied statistics and operations research.

Actuarial Science
The student who plans to enter the actuarial profession should be guided in course selection by the program of education and examination credits issued by the principal actuarial organization. Following a sequence in calculus and linear algebra (22M:25-26, 28 Calculus I-II, and 22M:27 Introduction to Linear Algebra at 22M:35-38 Engineering Calculus I-IV), the student should enroll on 22S:153-154 Introduction to Mathematical Statistics I-II, 22S:177 Numerical Analysis for Actuaries, and 22S:178 Gradua-
nomographic Tables, and 22S:184 Risk Theory.

Normally a student would complete all of these courses during the undergraduate year. Instead he or she would be advised to take a more general program and to consider completing the actuarial courses as part of a graduate program. Students of actuarial science are also advised to take at least one course in computer science and to consider a substantial program of courses from among those offered by the College of Business Administra-
tion.

Applied Mathematics
All students interested in applied mathematics should take the sequence 22M:25-26, 28 Calculus I-II, and 22M:27 Introduction to Linear Algebra or the sequence 22M:35-38 Engineering Cal-
culus I-IV.

The courses 22M:100 Introduction to Ordinary Differential Equations, 22M:101 Introduction to Partial Differential Equa-
tions, 22M:118 Complex Variables, 22M:170 Numerical Anal-
ysis: Nonlinear Equations and Approximation Theory, and
22M:171 Numerical Analysis: Differential Equations and Linear Algebra, are recommended. Additional courses directly con-
cerned with applications include 22M:104-105, 106-107 Theo-
retical Mechanics I-II, 22M:172 Fourier Series and Boundary Value Problems, 22M:173 Transform Calculus, and 22M:180-181 Applied Analysis. Other general courses which may be of interest are 22M:50 Elements of Group Theory, 22M:105 Analy-

Students in applied mathematics should be familiar with computer programming (22C:7 Introduction to Computing with FOR-
TRAN can be taken early along with calculus) and with the basic ideas of probability and statistics (the courses 22S:153-154 In-
roduction to Mathematical Statistics I-II or 22S:120 Probability
and Statistics are appropriate). To acquire an understanding of how mathematics is used in other areas, it is recommended that the student take a set of courses, involving mathematics in a signifi-
cant way, outside the Division of Mathematical Sciences. Stu-
dents who plan to graduate work in applied mathematics should take 22M:115 Introduction to Analysis I.

Mathematics Education
For general requirements for teacher education, see "College of
Education." The following mathematics courses are required for students in mathematics education:

The sequence 22M:25, 26 Calculus I and II, and 22M:27 Introduction to Linear Algebra, 22M:50 Elements of Group Theory, 22M:70 Euclidean Plane Geometry, and 22M:55 Foundations of Elementary Functions or Functions (to be taken before 74-135 Methods: Mathematics). A 100-level course in the same area of mathematics may be substituted for any one or more of these. Students are also required to have proficiency in one computer programming language.

In the 100-level courses the student should strive for breadth. It is recommended that the student select at least one of these courses in the Department of Statistics. One hundred-level courses listed which the student might select are 22M:120-121 Algebra I and II, 22M:115-116 Introduction to Analy-

Pure Mathematics
Students interested in this area of mathematics should take two of the following sequences: 22M:120-121 Abstract Algebra I-II, 22M:115-116 Introduction to Analysis I-II, 22M:103-104 Foun-
dations of Mathematics I-II and 22M:110-111 Elementary Topo-
ology 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 Programming with PL/I, 22M:100 Introduction to Ordinary Differential Equations, 22M:118 Complex Variables, 22S:153-154 Introduction to Mathemati-
cal Statistics I-II, or 22S:124 Introduction to Probability.

Probability and Statistics
The basis for this program is the calculus sequence 22M:25-26, 28 Calculus I-II, and 22M:27 Introduction to Linear Algebra or 22M:35-38 Engineering Calculus I-IV, together with one of these three sequences: 22S:153-154 Introduction to Mathematical Sta-
tistics I-II, 22S:124-127 Introduction to Probability, Introduction to Stochastic Processes, or 22S:131-132 Statistical Methods with Applications, Linear Statistical Models, with Applications. Students should also select: one or two courses in computer science from 22C:7 Introduction to Computing with FORTRAN, 22C:17 Programming with PL/I, or 22C:18 Assembly Language Programming; and one or two courses in mathematical analysis from 22M:55 Fundamental Properties of Spaces and Functions, 22M:105 Analysis for Applications and 22M:112 Introduction to Analysis I. Substantial work in one of the biological, social, physical or engineering sciences is also highly recommended.

Further courses in probability and statistics may be selected from courses in the Department of Statistics numbered 101 and above excluding 22S:102. Additional courses may be selected from 22M:50 Elements of Group Theory, 22M:110 Elementary Topology I, 22M:116 Introduction to Analysis II, 22M:118 Complex Variables, 22M:150 Matrix Theory, 22M:170 Numeri-
Applied Mathematical Science

Committee chairman: John S. Keyser
Degree offered: Ph.D.

Creative activities of an applied mathematical scientist include the formulation of scientific concepts and problems in mathematical language, the solution or approximation of solutions of these problems, the discussion, interpretation and evaluation of the results of his or her analysis, the exploration of new ideas and areas of application, the development of mathematical theories in areas which have not hitherto been subjected to systematic mathematical treatment. These efforts may, 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 one science (behavioral, biological, engineering, physical or medical), and the methods of applied mathematics. Additionally, the program seeks to develop the "climate" 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 program. The individual plan of study will be specifically developed by incorporating the desired balance in the appropriate science, advanced mathematics and applied mathematical science with the student's background, interests and goals.

A major objective of the program is to have the development of each student's dissertation follow the full cycle of research in applied mathematical science. Guided by the supervising committee, each student is expected to recognize a significant problem within his or her science. Thus he or she develops an appropriate mathematical model for that problem, critically examines that model with respect to its tractability and success in predictions, and develops improvements if necessary.

Students may enter with either a bachelor's or a master's degree. Prospective students are expected to have a strong 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 teaching scholarships and some research and teaching 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 programs, write to the Chairman, Program in Applied Mathematical Science, Graduate College, The University of Iowa, Iowa City, Iowa 52242.

Computer Science

Department chairman: Ronald L. Riley

Degree offered: B.A., B.S., M.S., Ph.D.

Undergraduate Program

Undergraduate majors 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 computer science:

Mathematics Requirements

250: Calculus I 4 s.h.
252: Calculus II 4 s.h.
or
227: Introduction to Linear Algebra 4 s.h.
(Students interested in taking 227: Linear Algebra) should take 227M. All students are urged to take both 250:252 and 227:227M."

Computer Science Core Requirements

226: Intro to Programming with PL/1 3 s.h.
227: Programming with PL/1 3 s.h.
228: Assembly Language Programming 3 s.h.
222: Data Structures 3 s.h.
223: Programming Language Concepts 3 s.h.
227: Introduction to System Hardware and Software 3 s.h.
229: Discrete Structures 3 s.h.
or
225: Introduction to Numerical Methods in Computing 3 s.h.
(All students are urged to take both 225:225M. Students who plan to go on to graduate work are especially urged to take 225:225 and either 225M: or 227:227M.)

29 s.h.

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 at the Mathematical Sciences Division Office, includes suggested elective programs, information concerning credit by examination for the computer science core requirements and other information. The student's adviser maintains an academic record sheet (discussed in the Handbook) concerning the approved elective program.

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. However, a certain core of courses should generally 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 necessary 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 heavy 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 each advanced degree student is individually arranged to fit his or her needs, each student will be expected to study in the areas of programming, computer systems and computation 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. graduates 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 will draw up a plan of study which will assure that the student achieves proficiency equivalent to that which can be gained by taking the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>22C:123</td>
<td>Advanced Computer Organization and Architecture</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>22C:123</td>
<td>Advanced Programming Language Concepts</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>22C:135</td>
<td>Introduction to Computation Theory</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>22C:193</td>
<td>Programming Laboratory</td>
<td>2 s.h.</td>
</tr>
<tr>
<td></td>
<td>Other 22C courses selected from 116, 118, 127, 144, 145, 178, 199, or any 200-level course</td>
<td>6 s.h.</td>
</tr>
<tr>
<td></td>
<td>Mathematics and statistics courses</td>
<td>6 s.h.</td>
</tr>
<tr>
<td></td>
<td>Additional courses selected by the student with the approval of the adviser</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

Recommended mathematics, statistics and additional courses depend upon the student's career objectives.


Any M.S. candidate may elect to write a thesis, and with the adviser's consent may apply up to six semester hours of thesis credit toward the total required for the M.S. degree. The minimum number of semester hours for the M.S. degree in computer science with or without thesis is 30.

**Ph.D. Program**

The candidate for the Ph.D. degree must successfully complete one of the examinations listed below. Each examination is a three-hour written examination, except D which is an oral examination.

A. Programming and Programming Languages
B. Computer Systems and Hardware
C. Computation and Automata Theory
D. Thesis Defense

A 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 it is taken as the master's final 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 recommended that the applicant have a B.A. or B.S. in computer science, mathematics, engineering or physical science. A student whose undergraduate program does not include equivalents of the courses required in the Computer Science undergraduate curriculum will be expected to complete these courses prior to admission to graduate courses, for which they are prerequisite.

**Doctor of Philosophy**

**Course Requirements**

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 acquires 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 following four categories:

- Programming concepts, including programming, programming languages, applications programming, simulation, artificial intelligence and numerical analysis.
- Theory of computation, including automata theory, computability and formal languages.
- Mathematical foundations, including set theory, algebra, analysis, logic and graph theory.
- Computer systems, including operating systems, computer architecture, 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 coursework in the first two categories above. Finally, each student must complete two semester hours of 22C:193 Programming Laboratory.

The student must complete three courses with grades of A or B, at least one of which is at the 200 level, in each of two areas:

- One area must be selected from: Algebra
- The other area may be selected from: Programming Concepts, Programming Languages, Computer Systems, and Hardware.
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 areas as approved by the department.

If the student selects statistics and probability as one of the areas, the advanced course may be chosen at the 100 level.

Comprehensive Examination
A student is admitted to candidacy for the Ph.D. degree in computer science only after completing the comprehensive examination. In addition, he or she must be recommended by a member of the computer science faculty. The comprehensive examination will normally be taken only when the student has completed coursework as required by the plan of study. There are three three-hour written examinations, which may be followed by an oral review:

Part I: On all aspects of programming and programming languages;

Part II: On the principles of computer architecture and operating systems;

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 maintaining the required GPA, 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.

Graduate Admissions
The department has a highly selective admissions policy and normally considers only students with a grade point average above 3.3.

Graduate Service Courses
Competence and experience in the use of a digital computer in problem solving is useful and often prerequisite to advanced study and research in many disciplines. For most students, the two-semester sequence 22C:106 Introduction to Programming with PL/I and 22C:107 Programming with PL/I is recommended. Students in fields in which other programming languages are heavily used may find 22C:106 Assembly Language Programming or 22C:109 Programming with COBOL more appropriate.

Courses

Primary for Undergraduates

22C: 1 Theory of Computing 3 s.h.
The nature, uses, and limitations of computers and computing are observed by a broad sample of computing techniques including hardware and computer operating, including system programs, one-semester computing, computer assembly instructions, information retrieval, file I/O, representative computer instructions, impact of computing technology on society, as prerequisites.

22C:3 Introduction to Computing with FORTRAN 4 s.h.
Basic concepts of computer structure and programming techniques, elementary assembly-language programming, algorithms, data representation, subroutines, user-defined functions, debug and report writing; emphasis on programming with FORTRAN.

22C:4 Programming with COBOL 3 s.h.
Use of the business-oriented language COBOL; records, files, and mass storage devices; programming techniques for file handling, sorting, generation of reports from files, and maintenance of sequential and indexed-file files. Prerequisites: 22C:3.

22C:16 Introduction to Programming with PL/I 3 s.h.
Programming and program design techniques using version of the PL/I programming language, forms a coordinated two-semester sequence with 22C:17: iteration, representation, structured control structures, internal variable representation and character data, 80x86-48 output, and structured programming.

22C:17 Programming with PL/I 3 s.h.
Continuation of 22C:16: block structure, same scope, memory allocation and design of program structures using procedures, subroutines, preprocessing; files and record layout; preprocessing; program design with large amounts of data and use of files; structured coding and debugging; 80x86-48 processor and application files. Prerequisite: 22C:16.

22C:21 Data Structures 3 s.h.
Representation of data and operations, CPU, algorithmic addressing, reversibility and the use of data structures in computer systems, input and output devices, memory hierarchy, and structures for efficient information retrieval; use of FORTRAN, PL/I, and an assembly language. Prerequisite: 22C:17.

22C:58 Programming Language Concepts 3 s.h.
System of programming languages; programming language structures (e.g., tokens, types, expressions, statements, blocks, control structures); control structures and operators; principles of software design and implementation; examples from ALGOL, FORTRAN, COBOL, PL/I, and Lisp. Prerequisite: 22C:17.

22C:60 Introduction to Systems Hardware and Software 3 s.h.
Basic hardware components, memory, buses, and microcomputer systems, computer organization, access to main memory, computer architecture, high-level language design, computer program design, basic principles of operating systems, structure and design of large computers, software engineering, system software, system design and implementation.

22C:80 Numerical Methods in Computing 3 s.h.
Numerical differentiation and integration, numerical solution of simultaneous linear equations and matrix operations. Interpolation techniques and curve fitting, numerical solution of ordinary differential equations; detailed error analysis of several of the techniques studied. Prerequisites: 22C:57 and programming experience.

22C:84 Topics in Computer Science 3 s.h.
Reading, research, or programming projects in computer science not available in other courses; aimed at students who wish to obtain experience in this area.

Two in mathematics education.

Course Distribution

A minimum of 30 semester hours of graduate credit, including at least 24 semester hours in this Division of Mathematical Sciences.

Any course in the Department of Mathematics numbered 100 or above, except 223:M:105 Analysis for Applications.


Comprehensive Examination

A six-hour examination over the required courses will assess the candidate's knowledge of mathematics and his or her knowledge of the relevance of specific concepts to the teaching of secondary school mathematics.

Program I (designed for prospective doctoral students)

Required Courses

Two from 223:M:115-116 Introduction to Analysis I-II and 223:M:210-211 Analysis I-II, including either 223:M:116 or 223:M:211.


Two in mathematics education.

Course Distribution

A minimum of 30 semester hours of graduate credit, including at least 24 semester hours in this Division of Mathematical Sciences.

Any course in the Department of Mathematics numbered 100 or above, except 223:M:105 Analysis for Applications.


Comprehensive Examination

A six-hour examination over the required courses will assess the candidate's knowledge of mathematics and his or her knowledge of the relevance of specific concepts to the teaching of secondary school mathematics.

Program I (designed for prospective doctoral students)

Required Courses

Two from 223:M:115-116 Introduction to Analysis I-II and 223:M:210-211 Analysis I-II, including either 223:M:116 or 223:M:211.


Two in mathematics education.

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A minimum of 30 semester hours of graduate credit, including at least 24 semester hours in this Division of Mathematical Sciences.

Any course in the Department of Mathematics numbered 100 or above, except 223:M:105 Analysis for Applications.


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A six-hour examination over the required courses will assess the candidate's knowledge of mathematics and his or her knowledge of the relevance of specific concepts to the teaching of secondary school mathematics.

Program I (designed for prospective doctoral students)

Required Courses

Two from 223:M:115-116 Introduction to Analysis I-II and 223:M:210-211 Analysis I-II, including either 223:M:116 or 223:M:211.


Two in mathematics education.

Course Distribution

A minimum of 30 semester hours of graduate credit, including at least 24 semester hours in this Division of Mathematical Sciences.

Any course in the Department of Mathematics numbered 100 or above, except 223:M:105 Analysis for Applications.


Comprehensive Examination

A six-hour examination over the required courses will assess the candidate's knowledge of mathematics and his or her knowledge of the relevance of specific concepts to the teaching of secondary school mathematics.

Program I (designed for prospective doctoral students)

Required Courses

Two from 223:M:115-116 Introduction to Analysis I-II and 223:M:210-211 Analysis I-II, including either 223:M:116 or 223:M:211.


Two in mathematics education.

Course Distribution

A minimum of 30 semester hours of graduate credit, including at least 24 semester hours in this Division of Mathematical Sciences.

Any course in the Department of Mathematics numbered 100 or above, except 223:M:105 Analysis for Applications.


Comprehensive Examination

A six-hour examination over the required courses will assess the candidate's knowledge of mathematics and his or her knowledge of the relevance of specific concepts to the teaching of secondary school mathematics.
Mathematics

the permission of the graduate committee, a candidate in this program may substitute an appropriate part of the Ph.D. comprehensive examination for part of the master's examination.)

Program III (nondepartmental students en route to a Ph.D. in another area)

No required courses.

Course distribution same as Program II.

Comprehensive Examination

The student in program III will be considered to have passed the comprehensive examination for the master's degree in mathematics upon satisfying the following two conditions:

Maintaining minimum grade-point average of 3.0 in all mathematics courses taken for the master's degree in mathematics.

Successful completion of comprehensive Ph.D. examinations in chosen area.

A student in Program III will be assigned a mathematics adviser who will work with the student and the student's adviser in his or her area outside the division to establish an appropriate curriculum for the master's degree in mathematics.

General Information

To be admitted to candidacy for the Ph.D. 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 summer sessions or one academic year 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. There is ample opportunity for Ph.D. candidates 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.

The Department of Mathematics also cooperates in interdisciplinary doctoral programs with the program in Applied Mathematical Sciences.

The requirements for the Ph.D. in mathematics include 72 hours of graduate credit, at least three years of graduate residence, including at least one at The University of Iowa, and passing of a comprehensive qualifying examination as described below. Also required in the field of research chosen by the candidates are a comprehensive examination, the writing of a thesis and a final examination. Ordinarily, the candidate must demonstrate to the adviser's satisfaction proficiency in French, German or Russian.

The qualifying examination covers three of the following areas: algebra, analysis, logic and foundations, topology. Each student decides in which three of the areas he or she wishes to be examined. The examinations are regularly given each academic year early in October and early in 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 advisers' help in planning a course of study that will prepare them for the comprehensive qualifying examination. Students who enter after having taken some graduate work elsewhere should likewise consult an adviser for an evaluation of the previous work and the planning of further study.

A Ph.D. in mathematics education is also offered. For further information, consult the brochure "Advanced Studies in Education," available from the College of Education.

Courses

Undergraduate: Lower Division

These courses are not open to graduate students except by special arrangement with chairman of the Department.

226:1 Basic Mathematical Techniques 3 s.h.

Algebra, functions, ratio and proportion, algebraic expressions and operations, simple products, linear and quadratic equations, simultaneous equations, exponents and indices. Prerequisite: one year of high school algebra, one year of high school geometry.

226:2 Mathematical Techniques I 4 s.h.

Equations and inequalities, functions and graphs, exponential and logarithmic functions, systems of equations and inequalities. Prerequisite: 226:1 or one and one-half years of high school algebra, one year of high school geometry.

226:3 Mathematical Techniques II 3 s.h.

Trigonometric functions, solutions of right and oblique triangles, complex numbers, series of real numbers, vectors. Prerequisite: 226:2 or two years of high school algebra, one year of high school geometry.

246:1 Matrix Algebra 3 s.h.

Elementary manipulations of matrices and determinants, rank and nullity of matrices, systems of linear equations, transformations in the plane, introduction to eigenvalue theory; primarily for students who need some technical competence in use of matrices. Prerequisite: 226:1 or three years of high school mathematics.

246:2 Quantitative Methods I 4 s.h.

Quantitative methods for solving problems relating to biological, management and social sciences; computer programming, systems of linear equations, linear programming, elements of probability. Prerequisite: 246:1. May be used to satisfy four hours of liberal arts core requirements in natural sciences.

246:10 Fundamentals of College Mathematics I 4 s.h.

Introduction to deductive and inductive reasoning; introduction to ideas of algebra, trigonometry, probability, matrices, graphs, conic sections, and elementary functions. Prerequisite: 226:1 or 226:10.

246:11 Fundamentals of College Mathematics II 4 s.h.

Introduction to analytic geometry and trigonometry; introduction to ideas of calculus, vectors, matrices, graphs, conic sections, and elementary functions. Prerequisite: 226:10 or 226:11.

246:16 Mathematics for the Biological Sciences 4 s.h.

Prerequisites: two years of high school algebra. Prerequisite: 246:1 or 226:10.

256:1 Calculus for the Biological Sciences 4 s.h.

Differential and integral calculus, applications to differential equations, multivariable calculus, matrices and complex numbers, applications in the life sciences. Prerequisite: two years of high school mathematics or 226:1.
Elementary Topics of General Interest

120-200 Elements of Group Theory
3 a.h.

120-250 Fundamentals of Euclidean Plane Geometry
3 a.h.

120-300 Theory of Inverses
3 a.h.

120-350 Elementary Geometric Figures
3 a.h.

Undergraduate: Upper Division

230-100 Introduction to Differential Equations
3 a.h.

230-150 Partial Differential Equations
3 a.h.

230-200 Foundations of Mathematics
3 a.h.

230-250 Set Theory
3 a.h.

230-300 Foundations of Geometry
3 a.h.
229516 Topics in Topological Dynamics 3-0 s.h.
Prerequisite: general knowledge of topological spaces, mostly continuity and its applications. May be repeated with consent of instructor. Prerequisite: M 398.

229519 Ordinary Differential Equations 2 s.h.
Exercises in theory of linear, class of equations systems, Picard-Bendixson theory, comparison and oscillatory theories, boundary value problems. Prerequisite: 229516. M 401 or equivalent.

229520 Topics in Ordinary Differential Equations 3-2 s.h.
Subject: special topics in theory of differential equations. Prerequisite: 229516. M 401.

229521 Topics in Applied Mathematics 3-2 s.h.
Selections from the applications of mathematics to other disciplines. Prerequisite: consent of instructor.

229525 Partial Differential Equations 3 s.h.
Caratheodory-Kovalevskaya theorem, finite difference equations; classification of second order equations. Prerequisite: 229516. M 401 or equivalent.

229526 Topics in Partial Differential Equations 3-2 s.h.
Selected advanced topics in partial differential equations. Prerequisite: 229525 or consent of instructor.

229527 Commutative Algebra 3 s.h.
Lattice theory in nontotally ordered rings, field extensions, usually closed rings. Prerequisite: 229526.

229528 Theory of Groups 3 s.h.
Homomorphisms, abelian groups, Sylow theorems, permutation groups, symmetric groups, free groups, composition series, wreath and semidirect groups. Prerequisite: M 229.

229529 Theory of Rings 3 s.h.
Rings, ideals, methods, modules, and simple rings, division rings, hereditary rings, prime and semiprime rings, matrix rings, primitive and injective modules, major products, modules, radicals. Prerequisite: M 229.

229530 Topics in Algebra 3-2 s.h.
Selected topics, including ideal theory, structure of rings, groups, group representations and Hilbert theory. Prerequisite: 229526 or consent of instructor.

229531 Representations of Finite Groups 3 s.h.
Structure of group algebras of finite groups, linear representations, reducibility of representations, character tables, representations of symmetries. Prerequisite: 229529 or equivalent.

229532 Representation Theory 3 s.h.
Local theory and congruence theory in semisimple groups, general theory of semisimple groups, and matrix groups. Prerequisite: 229526 or consent of instructor.

229533 Noncommutative Algebra 3 s.h.
Structure theory of various classes of algebras and nonassociative algebras, relation between general algebras and geometry and domain of possibility. Prerequisite: 229531 or consent of instructor.

229534 Homological Algebra 3 s.h.
Modules, tensor products, groups of homomorphisms, categories, functors, homology functors, projective and injective modules, derived functors, tensor and exterior functors, homological dimension. Prerequisite: 229529 or equivalent.

229535 Algebraic Topology 3 s.h.
Simplex complexes, homotopy and homology groups of spaces, simplicial complexes, complex cobordism, homology of fiber bundles and covering spaces, homology and cohomology theory, homology groups, relation between homology and homotopy. Prerequisite: 229531.

229537 Topics in Algebraic Topology 2-2 s.h.
Topics chosen from algebraic topology or related areas of mathematics, for example, topics from homotopy theory, homology theory, theorems of homology and homotopy theory, algebraic topology. Prerequisite: 229531 or consent of instructor.

229538 Theory of Probability 3 s.h.
Basic concepts; probability and characteristic function; convergence theorems; cumulative distributions; stochastic processes. Prerequisite: 229531. Same as 33546.

229539 Topics in Metric Geometry 3-2 s.h.
Topics selected from postgraduate geometry, functional analysis, fixed-point theory. Prerequisite: 229526. Foundations of Mathematics I 3 s.h.
Foundations of Mathematics II 3 s.h.

229541 Foundations of Mathematics I 3 s.h.
Foundations of Mathematics II 3 s.h.

229542 Number Theory in Linear Algebra 3 s.h.
Solutions of linear systems, eigenvalues, predicates, invariant metrics, conditioned and conditioned systems. Prerequisite: 229516 and 229515, or consent of instructor.

229543 Numerical Equations of Partial Differential Equations 3 s.h.
Numerical analysis of partial differential equations, theory, boundary value problems. Prerequisite: 229516 and 229515, or consent of instructor.

229545 Seminar: Algebra 3 s.h.
Prerequisite: consent of instructor.

229546 Seminar: Geometry 3 s.h.
Prerequisite: consent of instructor.

229547 Seminar: Foundations of Mathematics 3 s.h.
Prerequisite: consent of instructor.

229548 Seminar: Topology 3 s.h.
Prerequisite: consent of instructor.

229549 Seminar: Algebraic Topology 3 s.h.
Prerequisite: consent of instructor.

229550 Seminar: Analysis 3 s.h.
Prerequisite: consent of instructor.

229551 Seminar: Functional Analysis 3 s.h.
Prerequisite: consent of instructor.

229552 Seminar: Numerical Analysis 3 s.h.
Prerequisite: consent of instructor.

229556 Reading and Research 3 s.h.
Prerequisite: consent of advisor.

Statistics
Department chairman: John V. Hagg

Faculty: Paul S. Haeften, Donald E. Flett, Robert V. Hagg, Melvin B. Novak, Timothy H. Hagg, Paul D. Hagg.

Departmental office: 320B, Central Administration Building.

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

Statistics build mathematical models for processes which involve uncertainty, so they may better understand and perhaps control the process. In addition, statisticians help design and analyze scientific experiments. Because uncertainty is such a pervasive feature of life, statisticians are employed in almost every facet of our technologically advanced society. They are employed in industry (e.g., in the quality control of production processes) and in insurance firms as actuaries. In the government, key design and carry out statistical analyses, such as those of the Census Bureau and the Bureau of Labor Statistics. They serve in academic institutions, not only in statistics itself, but in medicine, statistics, engineering, education and other fields where modern research techniques are applicable.

Undergraduate Program

See "Division of Mathematical Sciences."

Graduate Program

The graduate program is designed to reflect the dual role of statistics, as an independent discipline within the mathematical sciences and as a research tool. The Department offers programs leading to the M.S. degree under both the thesis and non-thesis plan, in the fields of theoretical statistics and probability, applied statistics, actuarial science, operations research and biostatistics. Programs leading to the Ph.D. degree are offered in theoretical statistics, probability and applied statistics. The Department also cooperates in developing interdisciplinary doctoral programs under the auspices of Applied Mathematical Sciences.

To be admitted to the graduate program, the applicant should have an undergraduate major in one of the mathematical sciences.
With the approval of the Department, selected candidates may be granted admission on the basis of mathematical training through one year of calculus.

**Master’s Degree Programs**

The Department offers five M.S. degree programs, each 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**

224:115 Introduction to Analysis I
224:153-154 Introduction to Mathematical Statistics I-II
225:167 Introduction to Stochastic Processes

At least six semester hours from among:

224:116 Introduction to Analysis II
224:210-211 Analysis I-II
225:110 Applied Statistical Decision Theory
225:170 Introduction to Nonparametric Statistics
225:172 Topics in Statistics
225:253 Probability and Statistics I
225:254 Linear Models
225:256 Multivariate Analysis
225:271-272 Statistical Inference I-II

**Applied Statistics**

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

224:103 Introduction to the Design of Sample Surveys
224:138 Bayesian Statistics I
224:153-154 Introduction to Mathematical Statistics I-II
225:148 Analysis and Design of Experiments
225:162 Regression Analysis
225:172 Statistical Computation and Consulting

225:100 Introduction to Computing with FORTRAN

The remaining courses may be selected from among:

224:148 Intermediate Statistical Methods
224:160 Applied Statistical Decision Theory
224:161 Application of Multivariate Statistical Techniques
224:170 Introduction to Nonparametric Statistics
224:239 Bayesian Statistics II
224:170 Numerical Analysis: Nonlinear Equations and Approximation Theory
580:149 Digital Systems Simulation I
580:154 Quantitative Investment Analysis

Other courses relevant to applied statistics, but not appearing on this list, may be selected for inclusion in the M.S. program with the advisor.

**Actuarial Science**

225:154 Introduction to Mathematical Statistics I-II
225:177 Numerical Analysis for Actuaries
225:178 Graduation
225:179 Advanced Mathematics of Finance
225:180 Mathematics of Life Insurance
225:181-182 Actuarial Theory and Practice I-II
225:183 Construction of Demographic Tables
225:184 Risk Theory
225:277 Seminar: Actuarial Theory

Plus at least one course from outside the Division of Mathematical Sciences, most preferably elect courses from the College of Business Administration.

**Operations Research**

224:155
154 Introduction to Mathematical Statistics I-II
586:143 Quantitative Investment Analysis
586:242 Mathematical Programming I

It is also recommended that the following be taken:

224:147 Introduction to Stochastic Processes
586:243 Mathematical Programming II

**Biostatistics**

225:101 Biostatistics
225:140 Design Analysis of Experiments in Biomedical Sciences
225:130 Probability and Statistics
225:153 Introduction to Mathematical Statistics I
225:154 Construction of Demographic Tables
586:127 Engineering Management Science
586:176 Operations Management
225:158 Analysis and Design of Experiments
225:161 Application of Multivariate Statistical Techniques
225:103 Introduction to the Design of Sample Surveys
225:173 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 follows a course of study similar to 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: 225:235 Linear Models and 225:256 Multivariate Analysis, 225:264-265 Theory of Probability I-II, and/or 225:271-272 Statistical Inference I-II. Students in the applied
statistics program are also required to take 225:138 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 auxil-
liary goals of the doctoral program in statistics—to learn 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 statis-
tics consulting.
At least by the end of the spring semester of the second year in
the Department, the student should have taken the qualifying ex-
amination to determine if he or she has mastered the basic con-
cepts of probability and statistics. Examination essentially
covers topics studied in 225:153-154 Introduction to Mathematical
Statistics I-II, 225:167 Introduction to Stochastic Processes and
125:158 Analysis and Design of Experiments. A study guide for
the examination is available from the Department. This exami-
nation may be used in lieu of the master’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 225:161 Application of Multivariate Statistical Techniques, 225:162 Regression Anal-
ysis and 225:158 Analysis and Design of Experiments;
Mathematical Statistics—covers topics in 225:154 Introduction to Mathematical Statistics II, 225:170 Introduction to Non-
parametric statistics and 225:253-254 Probability and Statistics II;
Mathematical Analysis—covers material in 22M:210-211 Analy-
sis I-II.
After passing the preliminary examination, the student should obtain a thesis adviser. They should prepare a plan of study, then ask the Department to submit a request for the comprehensive examination, unless the student has exercised the option to take a preliminary and comprehensive examinations concurrently. A student’s performance on the comprehensive examination will be
determined satisfactory when he or she has passed the preliminary examination and a second examination from the three listed above.
Upon completion of the comprehensive examination, the stu-
dent and the thesis adviser should petition the Department chair-
man to appoint a committee to guide the dissertation investigation.
After the student has become familiar with the background liter-
ature for the dissertation, but before extensive original work has
begun, the student should present an oral prospectus to his or her
dissertation committee. The purpose of this presentation is to allow the dissertation committee, at an early stage, to offer
comments or suggestions concerning the topic of investigations for
the dissertation. The student should present to each member of the
committee a mimeographed copy of the prospectus, about five typewritten pages in length, at least one week prior to the oral presentation.
Typically, a student would present the dissertation prospectus
during the fall semester of his or her fourth year, but in no case less
than six months before the final oral examination.
A program which does not conform to the above requirements,
but is of high excellence, may be approved by the Department
chairman.
All doctoral programs end with an oral examination over the
candidate’s dissertation.
Special Features
Remote computer terminals are available in MacLean Hall and are
employed in several courses to give students experience using the
computer.
Bayesian statisticians are often teamed with other scientists in
research projects, it is important that students gain experience in
group efforts. In several courses the Department tries to provide
the experience. For example, a team of students, with faculty
supervision, performed an extensive analysis of the factors relating to
highway deaths in Iowa.
Courses

Primary for Undergraduates

Math: No student who has received credit for a course offered by the Department of Statistics at another college may receive credit for subsequently using a course numbered below 225:100. 4 s.h.
225:10 Quantitative Methods I 3 s.h.
225:15 Mathematical Statistics II 3 s.h.
225:25 Elementary Probability and Statistics 3 s.h.
Set approach to probability, assignment of probability using permutations and combinations, distributions of random variables and statistics, descriptive statistics, large sample theory, introduction to randomization tests and use of significance. Prerequisites: college algebra and trigonometry. Students with calculus should take 225:136, 125:141.
225:26 Probability and Statistics for Engineering and Physical Sciences 3 s.h.
Finds probability models, general probability models, random variables, functions of random variables, expectations, joint distributions, discrete distributions, continuous distributions, estimation, hypothesis testing, regression. Same as Engineering 360:102. Prerequisites: Mathematics 22M:40 or equivalent.
225:40 Insurance Mathematics 3 s.h.
Distributions from probability and mathematics of finance developed and applied in problems in determination of insurance premiums, benefits and reserves. Same as Business Administration 38:21. Prerequisites: 221:42 or 221:59; student with Mathematics 22M:25 or 22M:35 should take 125:140.

For Undergraduates and Graduates

225:101 Basic Statistics 3 s.h.
Elementary course on statistical methods primarily for research in social subjects and related fields.
225:102 Introduction to Statistical Methods 3 s.h.
Primary for students who are not statistics major; students should not take both 225:25 and 225:102. Same as Sociology 17:14, Psychology 3:143.
225:103 Introduction to the Design of Sample Surveys 3 s.h.
Same as Preventive Medicine and Environmental Health 101:163. Prerequisites: 225:15 or 225:102.
225:105 General Statistics 3 s.h.
Same as Sociology 12:153.
225:110 Probability and Statistics 4 s.h.
Finds general probability models, random variables, expectation, distribution, variance, correlation, covariance, regression, and hypoth-
oses testing. Prerequisits: 225:25 or 22M:35.
225:124 Introduction to Probability 3 s.h.
An introduction to the theory and applications of probability models including: elementary combinatorics, random variables, probability, interpretation, random variables, generating functions, random walks, Markov chains. Prerequisites: 22M:25 or 22M:35. Prerequisite: 22M:110.
225:121 Statistical Methods with Applications 3 s.h.
Same as Industrial and Management Engineering 366:121.
202/132 Linear Statistical Models with Applications 3 a.h.
202/133 Quality Control, Reliability and Engineering Statistics 3 a.h.
202/134 Bayesian Statistics 3 a.h.
202/140 Design-Analysis of Experiments in Biomedical Sciences 3 a.h.
202/141 Intermediate Statistical Methodology 4 a.h.
202/142 Introduction to Mathematical Statistics I 4 a.h.
202/143 Introduction to Mathematical Statistics II 4 a.h.
202/144 Applied Time Series Analysis 4 a.h.
202/146 Functional Data Analysis 4 a.h.
202/147 Robust Statistics 4 a.h.
202/148 Design of Experiments 4 a.h.
202/150 Applied Statistical Decision Theory 4 a.h.
202/151 Introduction to Nonparametric Statistics 3 a.h.
202/153 Multivariate Analysis 3 a.h.
202/154 Introduction to Mathematical Statistics 4 a.h.
202/155 Advanced Statistical Inference 3 a.h.
202/156 Advanced Statistical Inference 3 a.h.
202/157 Analysis and Design of Experiments 4 a.h.
202/158 Applied Statistical Decision Theory 4 a.h.
202/159 Multivariate Analysis 3 a.h.
202/160 Statistical Theory and Methodology 3 a.h.
202/161 Statistical Decision Theory 3 a.h.
202/162 Statistical Theory and Methodology 3 a.h.
202/163 Statistical Decision Theory 3 a.h.
202/164 Statistical Theory and Methodology 3 a.h.
202/165 Statistical Theory and Methodology 3 a.h.
202/166 Statistical Theory and Methodology 3 a.h.
202/167 Statistical Theory and Methodology 3 a.h.
202/168 Statistical Theory and Methodology 3 a.h.
202/169 Statistical Theory and Methodology 3 a.h.
202/170 Statistical Theory and Methodology 3 a.h.
Medical Technology

See "Pathology" in "College of Medicine" Section.

Microbiology

Department chairman: J. R. Porter
Degree offered: B.S., M.S., Ph.D.

Undergraduate Study

Microbiology is a science concerned with identification, structure, and activities of bacteria, fungi, protozoa, algae, and viruses. It also includes immunology, a discipline dealing with the response of man and animals to foreign material.

Microbiology evolves study of the distribution of microorganisms in nature, their relationships to each other and to other living things, their beneficial and harmful effects on man, animals, and plants, and the physical and chemical changes they produce in the environment.

All branches of the science—general microbiology, food and dairy microbiology, soil microbiology, plant microbiology, water and sewage microbiology, medical and veterinary microbiology, dental microbiology, invertebrate, pharmaceutical microbiology, marine microbiology, and microbiology—have expanded rapidly in recent years and offer rewarding career opportunities to qualified persons.

Microbiology is an excellent major for undergraduate students who want a good general education with emphasis on an important and increasing science. For the graduate of a bachelor's degree program in microbiology, positions are available in government, hospitals, public health and industrial control, research and teaching laboratories.

Students who continue beyond the bachelor's degree have career opportunities in these same areas, plus college and university teaching, with greater responsibilities and consequently higher salaries.

The Bachelor of Science Degree

The objectives of the undergraduate program in microbiology are to prepare students for careers in science, especially in their chosen majors, and to provide them with a broad background in other subjects, so they may relate microbiology to other fields of human endeavor.

An 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 two semester hours of special problems (61:161 Problems in Microbiology) may count toward this requirement. Students desiring to apply for certification by the National Registry of Microbiologists are required to take 20 semester hours in microbiology. Certification is required for employment or advancement in some areas. Mathematics and science courses required by the Department for the B.S. degree should be taken for better grades, except under unusual circumstances with the consent of the advisor. This is a typical curriculum for undergraduate majors:

First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principles of Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>22M:20 Elementary Functions</td>
<td>3</td>
</tr>
<tr>
<td>22M:15 Mathematics for the Biological Sciences</td>
<td>4</td>
</tr>
<tr>
<td>10:1 or 10:3 Rhetoric</td>
<td>4</td>
</tr>
<tr>
<td>Foreign Language</td>
<td>3-4</td>
</tr>
<tr>
<td>Physical Education</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>15-16</td>
</tr>
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</table>

Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principles of Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>22M:1 Chemistry Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>Core course or</td>
<td></td>
</tr>
<tr>
<td>22M:25 Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>22M:16 Calculus for the Biological Sciences</td>
<td>3</td>
</tr>
<tr>
<td>Foreign Language</td>
<td>3-4</td>
</tr>
<tr>
<td>Rhetoric (for those who took 10:1)</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>15-17</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organic Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>37:3 Principles of Animal Biology</td>
<td>5</td>
</tr>
<tr>
<td>Core course or</td>
<td></td>
</tr>
<tr>
<td>22M:26 Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>61:157 General Microbiology**</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
</tr>
</tbody>
</table>

Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organic Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>4:143 Intermediate Chemistry Laboratory I</td>
<td>2</td>
</tr>
<tr>
<td>4:11 Elementary Quantitative Analysis</td>
<td>4</td>
</tr>
<tr>
<td>Core, elective or advanced microbiology courses</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
</tr>
</tbody>
</table>
Junior Year

First Semester

99:120 The Chemistry of Biological Materials 3 s.h.
29:1 College Physics 4 s.h.
Physical education 2 s.h.
Core, elective or advanced microbiology courses 6-8 s.h.
15-17 s.h.

Second Semester

99:110 Metabolism 3 s.h.
29:2 College Physics 4 s.h.
Core, elective or advanced microbiology courses 8 s.h.
15 s.h.

Senior Year

First Semester

Core, elective or advanced microbiology courses 15-17 s.h.

Second Semester

Core, elective or advanced microbiology courses 15-17 s.h.
*222M:16 or the 222M:25-26 combination is optional, but may be desirable for students planning to do graduate work.
**May also be taken as the first semester of the junior year.

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 O. Schirger
Faculty: assistant professor George O. Schirger
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. The museum field is expanding rapidly, and graduates of the University occupy positions of responsibility as directors, curators and exhibit specialists in museums throughout the United States and Canada.

A major in one of the natural science disciplines (zoology, geology or botany) or anthropology for general science is recommended for students preparing for museum careers. Courses are offered during the annual eight-week Summer Session, as well as the regular academic year. They are elective college work, counting as credit toward the B.A. or B.S. degree. As graduate work, museum courses may be elected as a formal minor concentration on a master's degree in Anthropology or Science Education, or the Ph.D. degree in Science Education. Inquiries regarding program details should be directed to the appropriate major department.

Techniques presented in the Museum Laboratory are of value not only to those intending to pursue museum careers, but also to Pre-Natural, geology, zoology and anthropology students. Advanced museum students are afforded the opportunity to gain practical working experience by participating directly in the Museum of Natural History exhibit program.

Courses

(All registration by consent of instructor.)

24:101 Museum Techniques 1-2 s.h.
Collecting, preparing and exhibiting biological materials for museum, classroom teaching or research use.
24:102 Museum Techniques 1-2 s.h.
Continuation of 24:101, but may be taken as independent study.
24:103 Museum Administrative Work 1 s.h.
Techniques used in preparation of classroom teaching materials and museum exhibit accessories; instruction in various casting and modeling procedures used in reproduction of fossils, artifacts and biological specimens; applications to prehistoric, geological and anthropological studies.
24:104 Museum Administrative Work 2 s.h.
Continuation of 24:103, but may be taken as independent study.
24:110 Principles of Exhibit Theory and Design 4 s.h.
Directed study presentation of conceptual and design considerations employed in planning and construction of dynamic exhibit exhibits. Prerequisities: 24:103 and 105, or consent of instructor.
24:111 Principles of Exhibit Theory and Design 3 s.h.
Continuation of 24:110, but may be taken as independent study. Prerequisite: 24:110 or 105, or consent of instructor.

Music

Beatrice Weidman, Music Voerman
Faculty:
Quintet, Percussion Quartet, Vocal Quartet and the Baroque Players. Private lessons with faculty members are offered in all band and orchestra instruments, voice, piano and organ. At the undergraduate level, the School’s curriculum offers all qualified students an 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, colleges and universities, and for careers in performance.

The School is a charter member of the National Association of Schools of Music.

**Undergraduate Programs**

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 50 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, music therapy and composition/ theory.

**General Requirements**

All undergraduate enrollments 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:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits (S. H.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25:1-2</td>
<td>Literature and Theory I-II</td>
<td>3 each</td>
</tr>
<tr>
<td>25:3-4</td>
<td>Aural Skills I-II</td>
<td>1 each</td>
</tr>
<tr>
<td>25:5-6</td>
<td>Literature and Theory III-IV</td>
<td>3 each</td>
</tr>
<tr>
<td>25:7-8</td>
<td>Aural Skills III-IV</td>
<td>1 each</td>
</tr>
<tr>
<td>25:91-92</td>
<td>History of Music I-II</td>
<td>3 each</td>
</tr>
<tr>
<td>25:71-72</td>
<td>Group Piano Instruction I-II or adequate proficiency</td>
<td>1 each</td>
</tr>
<tr>
<td>25:85</td>
<td>Recital Attendance (required of wind, percussion, string and voice majors for seven semesters)</td>
<td>0 s.h.</td>
</tr>
<tr>
<td>25:144</td>
<td>Senior Recital</td>
<td>0 s.h.</td>
</tr>
<tr>
<td>25:15</td>
<td>Undergraduate Composition</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>25:118</td>
<td>Jazz Composition and Arranging</td>
<td>1-2 s.h.</td>
</tr>
<tr>
<td>25:143</td>
<td>Counterpoint Forms</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>25:146</td>
<td>20th-Century Harmony and Counterpoint</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>25:147</td>
<td>Vocal Forms</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>25:148</td>
<td>Analysis of Music Literature, 1600-1750</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>25:149</td>
<td>Analysis of Music Literature, 1750-1825</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>25:150</td>
<td>Analysis of Music Literature, 1825-1900</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>25:151</td>
<td>Analysis of Music Literature, 1890-Present</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>25:152</td>
<td>Analysis of Music Literature, Special Topics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>25:153</td>
<td>Thorough Bass Realization I</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>25:157</td>
<td>Orchestration</td>
<td>2 s.h.</td>
</tr>
<tr>
<td></td>
<td>Four years of applied music</td>
<td></td>
</tr>
</tbody>
</table>

Four years of participation in band, orchestra or chorus. As a minimum requirement, wind and percussion majors shall participate in the concert and marching band programs during the first two years in residence at the University. Keyboard majors may substitute accompanying in place of large ensemble participation for two semesters during their junior and/or senior year, with the consent of their advisor. Any requests for adjustment of the rules pertaining to performance in large ensembles must be submitted to a reviewing committee.

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, general music and music therapy. 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.

**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 Violinists take viola and bass; violinists take violin and bass; cellists take viola and bass; bassists take violin and cello. 1-2 s.h.

**Instrumental Techniques**

- 75:143 Instrumental Techniques (normally clarinet and contrabass) 2 s.h.
- 25:107 Instrumental Conducting I 2 s.h.
- 25:108 Instrumental Conducting II 1 s.h.
- 75:130 String Techniques and Methods 3 s.h.
### Music

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>7E:145</td>
<td>Methods and Materials: Elementary School Music</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>7S:140</td>
<td>Methods and Materials: Secondary School Instrumental Music</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>7S:191</td>
<td>Observation and Laboratory Practice in the Secondary School</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>7S:192</td>
<td>Laboratory Practice in the Elementary School</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>7S:187</td>
<td>Seminar: Curriculum and Student Teaching</td>
<td>1 s.h.</td>
</tr>
</tbody>
</table>

#### Brass, Woodwind or Percussion Majors

All brass, woodwind and percussion majors in the music education program must participate in concert band eight semesters, and in marching band for two fall semesters during the first two years in residence at the University. In the marching band program, students will be assigned by the Director of Bands to either Section 1—Football Marching Band or Section 2—Marching Band Techniques.

**Courses required:**

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>7S:143</td>
<td>(25:105) Instrumental Techniques</td>
<td>8 s.h.</td>
</tr>
<tr>
<td>25:107</td>
<td>Instrumental Conducting I</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>25:108</td>
<td>Instrumental Conducting II</td>
<td>1 s.h.</td>
</tr>
<tr>
<td>7E:145</td>
<td>Methods and Materials: Elementary School Music</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>7E:140</td>
<td>Methods and Materials: Secondary School Instrumental Music</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>7E:191</td>
<td>Observation and Laboratory Practice in the Secondary School</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>7E:192</td>
<td>Laboratory Practice in the Elementary School</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>7S:187</td>
<td>Seminar: Curriculum and Student Teaching</td>
<td>1 s.h.</td>
</tr>
</tbody>
</table>

#### Vocal and Keyboard Majors

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>7S:147</td>
<td>(25:109) Choral Methods and Conducting</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>7S:148</td>
<td>(25:110) Choral Literature and Conducting</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>25:115-16</td>
<td>Diction for Singers I-II</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>7E:145</td>
<td>Methods and Materials: Elementary School Music</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>7E:142</td>
<td>Methods and Materials: Secondary School General Music</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>7E:191</td>
<td>Observation and Laboratory Practice in the Secondary School</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>7E:192</td>
<td>Laboratory Practice in the Elementary School</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>7S:187</td>
<td>Seminar: Curriculum and Student Teaching</td>
<td>1 s.h.</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>7E:119</td>
<td>Methods: Basic Skills and Techniques in Music Education</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>7E:124</td>
<td>Methods: Music in the Elementary School</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>7E:192</td>
<td>Laboratory Practice in the Elementary School</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>25:139</td>
<td>Applied music</td>
<td>2 s.h.</td>
</tr>
<tr>
<td></td>
<td>Ensemble participation</td>
<td>2 s.h.</td>
</tr>
</tbody>
</table>

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 advisor.

### Music Therapy

Admission to the program in music therapy is based on (a) demonstrated minimum keyboard skills, and (b) successful completion of the introductory course in music therapy (25:114). The number of students admitted to the program is limited by the types and amounts of clinical experience available on campus. In addition to the specific courses in music therapy listed below, specific courses are required in biology, sociology, abnormal psychology and social psychology. A six-month internship in an approved off-campus clinical facility is required before the completion of the degree and certification as a registered music therapist (RMT). For greater job opportunities, students also are encouraged to complete the music teacher certification requirements. Complete information on the program is available in the music education office.

**Course requirements:**

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>25:114</td>
<td>Orientation to Music Therapy</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>7S:144</td>
<td>Psychology of Music I</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>7S:149</td>
<td>Laboratory: Psychology of Music</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>25:138</td>
<td>Influence of Music on Behavior</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>25:139</td>
<td>Principles and Procedures in Music Therapy</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>25:140</td>
<td>Internship in Music Therapy</td>
<td>2 s.h.</td>
</tr>
</tbody>
</table>

### 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, in consultation with whom a course of study leading to the degree shall be determined. Admission is based on an evaluation of original compositions submitted to an admission 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:
25:148 Literature and Theory I-IV: Audial Skills 16 s.h.
25:91-2 History of Music I-II 6 s.h.

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 as 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 minimum 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 25:144 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 committeee 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
The entering graduate student must take the School of Music 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. (For general graduate admission, degree and examination requirements, see the "Graduate College" section of the Catalog.)

Master of Arts
Areas of concentration for M.A. degrees are composition, music history and musicology, music education, music theory and performance (including conducting).

General Requirements
No credit for the Master of Arts degree must include: 25:321 Introduction to Graduate Study, in Music, and Theory. Two of the following:
25:146 Counterpointal Forms
25:147 Tonal Forms
One elective from the analytical studies sequence (25:148-152) or equivalent.

If excused from either 25:145 or 25:147 as a result of the Advisory Examination, the student shall take one from which he or she was not excused, and the elective from the analytical studies series. If excused from both 25:145 and 25:147, the student need take only the unassigned studies elective.

Any serious music theory and ear training deficiencies revealed in the Advisory Examination are to be removed through 25:11 Review Theory.

Music History
25:301-2 Advanced History and Literature of Music I-II, or equivalent, or satisfactory Advisory Examination score.

If excused from 25:301 and/or 25:302 as a result of the Advisory Examination, the student shall take another course from the music history sequence (25:300-319). Courses 25:323, 25:330-332 and others offered by the musicology staff may be elected in special cases, with permission of the musicology adviser.

Ensemble Participation
25:185 University Choir, or Kantorei
25:191 Symphonic Choir
25:192 Orchestra

Keyboard majors may substitute accompaniment for participation in a large ensemble, at the discretion of their adviser. Theory, composition, musicology and music education majors may, with their advisers' permission, substitute other ensembles. Voice majors, with their advisers' permission, may be excused from participation in large vocal ensembles during any semester in which they are singing major roles in opera theater. Any requests for adjustment of this requirement must be submitted to a reviewing committee.

Electives
Courses in the student's area of concentration.

Admission
Before an applicant will be considered for admission, 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—no materials required

Performance (including conducting)—audition

Music History and Musicology—research papers

Information about specific admission and curricular requirements for each area is available from the Director’s Office.

Master of Fine Arts

The M.F.A. is for students of superior ability in the area of composition or performance (including conducting). It requires a minimum of 48 post-baccalaureate semester hours.

In addition to the entrance and curricular requirements for the M.A. in Music degree, the student must also present at least two full-length recitals or programs (25:401 M.F.A. Thesis), for which a maximum 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 Degrees

General Requirements

All doctoral study in music includes:

- Minimum course requirements listed under the M.A. degree.
- One or more additional electives from the analytical studies sequence 25:168-125 or equivalent.
- One or more additional courses in the music history—musicology sequence indicated in the master's degree requirements.
- 25:205 Physics of Sound and Music or equivalent.

Reading proficiency in at least one foreign language. (Music education students may substitute two courses in statistics for the language requirement.) This requirement must be completed before the comprehensive examination is taken.

Dissertation.

All doctoral students must be available for participation in a large ensemble (23:182 Opera Theatre, 25:183 University Choir, 25:191 Symphonic Choir, 25:191% Orchestra, 25:194 Symphony Band, Wind Ensemble, Concert Band) during each term of registration unless excused by their advisors. Keyboard majors may substitute accompaniment in place of participation in a large ensemble, at the discretion of their advisor.

Doctor of Philosophy

Areas of concentration include composition, music history and musicology, music education, music theory and music literature.

Music

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.

Information about specific admission and curricular requirements for each area is available from the Director’s Office.

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. Vocalists 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 make a scholarly investigation of limited scope by means of a written essay.

Admission

Before an applicant will be considered for admission to a doctoral program, 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—research papers
- Music Literature—research papers and audition
- Performance (including conducting)—audition
- Music History and Musicology—research papers

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:

- Camerata Singers
- Old Gold Singers
- Kasseret
- University Choir
- Symphonic Choir
- Opera Theater
- College Musician
- Chamber Choir
- Symphony Orchestra
- Wind Ensemble
- Concert Band
- Marching Band
- Jazz Workshop/Stage Bands
- Percussion Ensemble
- Scottish Highlanders
Music for Non-Majors

Students who are not majoring in music but have an vocational interest in it may find 25:159 Late 18th- and 19th-Century Composers, 25:160 Early 18th- and 20th-Century Composers or 11:39-40 Masterpieces of Music, helpful in acquainting them with music as listeners.

The course 25:10 Fundamentals of Music is for non-majors who have little or no experience with notation, theory andaural skills. With the instructor's approval, non-majors with an elementary background in music may register for 25:12 Literature and Theory I and 25:224 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 provides 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 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 Hanchet Auditorium (1972), the University of Iowa Center for the Arts has one of the nation's finest facilities for teaching and performance in music. In addition to class and seminar rooms, the Music Building includes 55 teaching studios, 73 practice rooms, a large library, two electronic music laboratories, soundproof car training and listening facilities with 30 listening posts, four large rehearsal halls, ample solo and ensemble practice facilities, professional recording facilities, eight practice and recital organs and the 720-seat Clapp Recital Hall. Hanchet Auditorium seats 2,680 persons for concerts, 2,400 for recitals and other stage productions.

Library resources include more than 50,000 volumes of music and books, increasing at the rate of approximately 2,000 a year, and more than 2,100 sets of microfilms, a microfilm file of approximately 300 titles, nearly 1,500 LP records and 175 periodicals in several languages. The acquisition program gives particular attention to a strong reference collection, emphasizing resources for musical research and performance. The library's quarters in the Music Building provide 24 study carrels, a microreader room, a typing room, a seminar and rare books room, a language instruction area and a separate area for the Goldstein Band Library, one of the world's most famous collections of band music.

Courses

Courses for Undergraduates and Graduates

Music Education

Where dual numbers are indicated, students preparing for Music Teacher Certificate should register under education number.

25:71 Group Piano Instruction I 1 h.

25:79 Group Piano Instruction II 1 h.

25:160 Music Library 1 h.

25:167 Instrumental Conducting I 1 h.

25:168 Instrumental Conducting II 1 h.

25:169 Choral Conducting I 1 h.

25:170 Choral Conducting II 1 h.

25:171 Choral Techniques 1 h.

25:172 String Techniques and Methods 1 h.

25:173 Methods of Teaching Piano 1 h.

25:174 Orientation to Music Therapy 1 h.

25:176 Option for Bachelor's Degree 1 h.

25:177 English and French 1 h.

25:178 Music for Singers I 1 h.

25:179 History of Band 1 h.

25:180 Review Theory 1 h.

25:181 Undergraduate Composition 2 h.

History and Research

25:85 Recital Attendance 6 h.

25:91 History of Music I 3 h.

25:93 History of Music II 3 h.

25:94 History of Music III 3 h.

25:95 History of Music IV 3 h.

25:96 History of Music V 3 h.

25:97 History of Music VI 3 h.

25:98 History of Music VII 3 h.

25:99 History of Music VIII 3 h.

26:91 Music Research 1 h.

Courses for Undergraduates

Music and Composition

25:1 Literature and Theory I 3 h.

25:2 Literature and Theory II 3 h.

25:3 Aural Skills I 1 h.

25:4 Aural Skills II 1 h.

25:5 Literature and Theory I 3 h.

25:6 Literature and Theory II 3 h.

25:7 Aural Skills III 1 h.

25:8 Aural Skills IV 1 h.

25:9 Aural Skills V 1 h.

25:10 Fundamentals of Music 3 h.

25:11 Elementary Harmony, Aural and Sight Singing 3 h.

25:12 Literature and Theory I 3 h.

25:13 Literature and Theory II 3 h.

25:14 Elementary Voice I 3 h.

25:15 Elementary Voice II 3 h.

25:16 Elementary Voice III 3 h.

25:17 Elementary Voice IV 3 h.

25:18 Elementary Voice V 3 h.

25:19 Elementary Voice VI 3 h.

25:20 Elementary Voice VII 3 h.

25:21 Elementary Voice VIII 3 h.

25:22 Elementary Voice IX 3 h.

25:23 Elementary Voice X 3 h.

25:24 Elementary Voice XI 3 h.

25:25 Elementary Voice XII 3 h.

25:26 Elementary Voice XIII 3 h.

25:27 Elementary Voice XIV 3 h.

25:28 Elementary Voice XV 3 h.

25:29 Elementary Voice XVI 3 h.

25:30 Elementary Voice XVII 3 h.

25:31 Elementary Voice XVIII 3 h.

25:32 Elementary Voice XIX 3 h.

25:33 Elementary Voice XX 3 h.

25:34 Elementary Voice XXI 3 h.

25:35 Elementary Voice XXII 3 h.

25:36 Elementary Voice XXIII 3 h.

25:37 Elementary Voice XXIV 3 h.

25:38 Elementary Voice XXV 3 h.

25:39 Elementary Voice XXVI 3 h.

25:40 Elementary Voice XXVII 3 h.

25:41 Elementary Voice XXVIII 3 h.

25:42 Elementary Voice XXIX 3 h.

25:43 Elementary Voice XXX 3 h.

25:44 Elementary Voice XXXI 3 h.

25:45 Elementary Voice XXXII 3 h.

25:46 Elementary Voice XXXIII 3 h.

25:47 Elementary Voice XXXIV 3 h.

25:48 Elementary Voice XXXV 3 h.

25:49 Elementary Voice XXXVI 3 h.

25:50 Elementary Voice XXXVII 3 h.

25:51 Elementary Voice XXXVIII 3 h.

25:52 Elementary Voice XXXIX 3 h.

25:53 Elementary Voice XLI 3 h.

25:54 Elementary Voice XLII 3 h.

25:55 Elementary Voice XLIII 3 h.

25:56 Elementary Voice XLIV 3 h.

25:57 Elementary Voice XLV 3 h.

25:58 Elementary Voice XLVI 3 h.

25:59 Elementary Voice XLVII 3 h.

25:60 Elementary Voice XLVIII 3 h.

25:61 Elementary Voice XLIX 3 h.

25:62 Elementary Voice L 3 h.

25:63 Elementary Voice LI 3 h.

25:64 Elementary Voice LII 3 h.

25:65 Elementary Voice LIII 3 h.

25:66 Elementary Voice LIV 3 h.

25:67 Elementary Voice LV 3 h.

25:68 Elementary Voice LV I 3 h.

25:69 Elementary Voice LV II 3 h.

25:70 Elementary Voice LV III 3 h.

25:71 Elementary Voice LV IV 3 h.

25:72 Elementary Voice LV V 3 h.

25:73 Elementary Voice LV VI 3 h.

25:74 Elementary Voice LV VII 3 h.

25:75 Elementary Voice LV VIII 3 h.

25:76 Elementary Voice LV IX 3 h.

25:77 Elementary Voice LV X 3 h.

25:78 Elementary Voice LV XI 3 h.

25:79 Elementary Voice LV XII 3 h.

25:80 Elementary Voice LV XIII 3 h.

25:81 Elementary Voice LV XIV 3 h.

25:82 Elementary Voice LV XV 3 h.

25:83 Elementary Voice LV XVI 3 h.

25:84 Elementary Voice LV XVII 3 h.

25:85 Elementary Voice LV XVIII 3 h.

25:86 Elementary Voice LV XIX 3 h.

25:87 Elementary Voice LV XX 3 h.

25:88 Elementary Voice LV XXI 3 h.

25:89 Elementary Voice LV XXII 3 h.

25:90 Elementary Voice LV XXIII 3 h.

25:91 Elementary Voice LV XXIV 3 h.

25:92 Elementary Voice LV XXV 3 h.

25:93 Elementary Voice LV XXVI 3 h.

25:94 Elementary Voice LV XXVII 3 h.

25:95 Elementary Voice LV XXVIII 3 h.

25:96 Elementary Voice LV XXIX 3 h.

25:97 Elementary Voice LV XXX 3 h.

25:98 Elementary Voice LV XXXI 3 h.

25:99 Elementary Voice LV XXXII 3 h.

26:1 Literature and Theory I 3 h.

26:2 Literature and Theory II 3 h.

26:3 Aural Skills I 1 h.

26:4 Aural Skills II 1 h.

26:5 Literature and Theory I 3 h.

26:6 Literature and Theory II 3 h.

26:7 Aural Skills III 1 h.

26:8 Aural Skills IV 1 h.

26:9 Aural Skills V 1 h.

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26:18 Elementary Voice V 3 h.

26:19 Elementary Voice VI 3 h.

26:20 Elementary Voice VII 3 h.

26:21 Elementary Voice VIII 3 h.

26:22 Elementary Voice IX 3 h.

26:23 Elementary Voice X 3 h.

26:24 Elementary Voice XI 3 h.

26:25 Elementary Voice XII 3 h.

26:26 Elementary Voice XIII 3 h.
52.209 Advanced Instrumental Methods and Literature I 2-3 s.h. 
52.210 Advanced Instrumental Methods and Literature II 2-3 s.h. 
52.229 Music Education Workshop: Instrumental Music 1-2 s.h. In Public School 
Same as in 75.231. 
52.235 Blues Reading 1 s.h. 
52.236 Seminar: Contemporary Issues in Music Education 1-2 s.h. 
Same as 75.141.

Theory and Composition
52.254 Practice Teaching in Theory arr. 
52.256 Methods and Techniques of Teaching Basic Music Literature arr. 
Techniques for teaching basic theory skills, formal, rhythmic, melodic, harmonic, dictation and related musicological skills. 
52.257 Seminar: Musical Theory Research arr. 
52.261 History of Music Theory I 3 s.h. 
52.262 History of Music Theory II 3 s.h. 
52.260 Electronic Studiolo I arr. 
Nature, use and use of equipment in electronic music studies. Prerequisite: 25.15.arr. 
52.261 Electronic Studiolo II arr. 
Individual creative studies. Prerequisite: 25.250 and consent of instructor. May be repeated for credit. 
52.262 Intermedia II 3 s.h. 
Same as Art 12.01.01, Speech and Dramatic Art 361.124.

Musicology, Literature, and Research
52.261 Advanced Choral Literature I 3 s.h. 
Choral music from Gregorian choral through Bach. 
52.262 Advanced Choral Literature II 3 s.h. 
Choral music from Wagner through contemporary. 
52.261 Advanced History and Literature of Music I 3 s.h. 
Style in Western music. 
52.262 Advanced History and Literature of Music II 3 s.h. 
Continuation of 26.161, but may be taken as independent work with permission of instructor. 
(Notes: courses 25.252-25.314 are a series of intensive survey of special areas in the history of music; with detailed analysis of representative works; offered in rotation approximately every two or three years.)
52.232 Medieval Music arr. 
52.234 Renaissance Music 3 s.h. 
52.236 16th-Century Music 3 s.h. 
52.238 Age of Bach and Handel 3 s.h. 
52.238 The Classical Period 3 s.h. 
52.238 19th-Century Music 3 s.h. 
52.310 20th-Century Music 3 s.h. 
52.311 Music of the Americas: U.S. and Canada 3 s.h. 
52.313 Music of the Americas: Latin America 3 s.h. 
52.315 Major Composers 3 s.h. 
52.317 The Genre of Musica 3 s.h. 
52.318 The History of Musical Instruments 3 s.h. 
Classical music of the Western world in relation and development of musical instruments, and history of instruments to the 20th century. 
52.317 Principles of Construction and Maintenance of Historical Instruments arr. 
52.318 Rhetorical Music arr. 
An introduction to the music of the indigenous peoples of sub-Saharan Africa, the Americas, Australia and Oceania. 
52.319 Oriental Music 3 s.h. 
Different styles of India, China, Korea, Japan, Indonesia, Iran and the Arab countries. 
52.321 Introduction to Graduate Study in Music 2 s.h. 
Use of the music library, reference materials; bibliographies; research problems and methods, with guest lectures from various musical subject areas; required of all graduate students. 
52.323 Advanced Bibliography and Reference Materials 4 s.h. 
Advanced bibliography, including additional materials in the student's major field of concentration. Prerequisites: 25.321 or consent of instructor. 
52.326 Musical History and Reference Reports 1-2 s.h. 
Musical bibliography, manuscripts and critical study of original vocal and instrumental sources and styles. May be repeated for credit. 
52.330 Seminar in Musicology 2-3 s.h. 
Bibliographical materials, library resources, style analysis and criticism and related fields. Study of special topics in groups and by individual investigation. Prerequisites: consent of instructor. May be repeated for credit. 
52.331 Performance Practices II: Medieval and Renaissance Music 3 s.h. 
Practices of interpretation of early music. 
52.332 Performance Practices II: 17th- and 18th-Century Music 3 s.h. 
Practices of interpretation of music of Baroque and Classical periods. 
52.335 Seminar: Wind Instrument Performance arr. 
52.337 Music Research and the Computer 3 s.h. 
Current applications of high-speed digital computers in research in music theory, history and composition. 
52.339 Seminar: Opera Literature arr. 
A study in detail of most important opera scores from standpoint of performers, directors and production problems. 
52.341 Seminar: Brass Instrument Performance arr. 
52.341 Seminar: Choral Literature and Analysis III 3 s.h. 
52.342 Seminar: Choral Literature and Analysis IV 3 s.h. 
52.343 Seminar: Choral Literature and Analysis V 3 s.h. 
52.344 Seminar on Contemporary Choral Works 3 s.h. 
52.351 Survey of Song Literature I 3 s.h. 
52.352 Survey of Song Literature II 1 s.h. 
52.353 Research and 20th century English, French, Italian, Scandinavian, Spanish and Russian song. 3 s.h. 
52.354 Survey of Song Literature IV 3 s.h. 
52.361 Special Studies: Piano Literatures arr. 
In-depth study of special aspects of piano literatures; primarily for D.M.A. students. May be repeated for credit. 
52.364 Seminar in Musical Theory arr. 
52.365 Readings in Music History arr. 

Thesis
52.400 M.A. Thesis arr. 
52.401 M.F.A. Thesis arr. 
52.405 D.M.A. Thesis arr. 
52.602 D.M.A. Essay arr. 
52.603 D.M.A. Recital arr. 

Music Education
(
See "College of Education" for course descriptions.
57.101 Music: Basic Skills and Techniques in Music Education 3 s.h.
57.102 Methods and Materials: Music for the Classroom Teacher 3 s.h.
### Applied Music

A fee of $50 per semester is charged for each applied music course in the student's major field of performance. Courses consist of individual or a combination of individual and class lessons, at the option of the instructor. Lessons are a minimum of one hour per week. Students electing two courses in the same semester are assessed a $90 fee. All music majors are expected to attend seminars of the applied music courses for which they register.

Students not majoring in music may register for only 25:18 or 25:120 Piano or for 25:120 Piano. Non-majors must have had at least two years of previous piano instruction to register for applied piano.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>25:15 Voice</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:16 Piano</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:17 Harpsichord</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:18 Organ</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:19 Harp</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:20 Violin</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:21 Cello</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:22 French horn</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:23 Viola</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:24 String bass</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:25 Tuba</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:26 Percussion</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:27 French horn</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:28 Trumpet</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:29 Baritone</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:30 Trombone</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:31 French horn</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:32 Tuba</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:33 Percussion</td>
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<td>arr.</td>
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<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:36 Baritone</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:37 Trombone</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:38 French horn</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:39 French horn</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:40 Voice</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:41 Piano</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:42 Organ</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:43 Harp</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:44 Viola</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:45 Violin</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:46 Cello</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:47 String bass</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:48 Tuba</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:49 Percussion</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:50 Clarinet</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:51 Bassoon</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:52 Saxophone</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:53 French horn</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:54 Trumpet</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:55 French horn</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:56 French horn</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:57 French horn</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
<tr>
<td>25:58 French horn</td>
<td>0-1 s.h.</td>
<td>arr.</td>
</tr>
</tbody>
</table>

### Minor Field (open to non-majors)

Instruction in student’s minor field of performance is for non-music majors offered for a fee of $35 per course per semester. A course consists of one half-hour lesson or two hours of class instruction weekly, at option of instructor.
Philosophy

25:154 Baritone 1 a.h.
25:155 Tenor 1 a.h.
25:156 Tuba 1 a.h.
25:157 Percussion 1 a.h.

Ensemble
No fee is charged for ensemble courses. Courses may be repeated for credit. Prerequisite for each: consent of instructor.

25:156 Scottish Highlanders 0-1 a.h.
25:154 Solo Roles arr.
25:142 Concertina Singers 1 a.h.
25:141 Old Gold Singers 0-2 a.h.
25:182 Opera Theater arr.
25:183 Chamber Orchestra arr.
25:184 Collegium Musicum arr.
25:198 University Choir arr.
25:198 Piano Accompaniment arr.
25:188 String Chamber Music arr.
25:189 Woodwind Chamber Music arr.
25:190 Brass Chamber Music arr.
25:191 Vocal Chamber Music arr.
25:192 Orchestra arr.
25:193 Marching Band arr.
25:196 Percussion Ensemble arr.
25:199 Chamber Jazz Band arr.

Lab fee for 43:115 and music/education majors.
25:197 Jazz Workshop arr.

Summer Instruction for Children
Children may enroll for applied music courses during the eighth-week summer session. Fee is $35 for one half-hour lesson weekly.

Nuclear Medicine Technology
See "College of Medicine."

Nuclear Science and Technology
See "College of Medicine."

Philosophy
Department chairman: Penelop Buchhammer
Degrees offered: B.A., M.A., Ph.D.

Undergraduate Program
The undergraduate program in philosophy provides knowledge of the basic issues and the main developments in Western philosophy, and strong preparation in 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 27 semester hours of courses numbered from 26:101 to 26:190, including:

26:103 Introduction to Logic 1 a.h.
26:111 Ancient Philosophy 3 a.h.
26:113 Early Modern Philosophy 3 a.h.

Honor Program
The Department administers an Honors program for undergraduate majors of superior ability. To be eligible for the program, a student must have a cumulative grade point average of at least 3.0. The program is available to both students who intend to do graduate work in philosophy and to those who do not. An individualized honors program is developed by the student in consultation with his or her adviser in the Department. A student who is eligible for and interested in the program should consult with his or her adviser about it as early as possible, preferably in the sophomore year.

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.

Master of Arts
The Master of Arts degree requires a minimum of 30 semester hours and may be taken without thesis. Requirements include passing, at a high level of performance, courses in metaphysics and epistemology, history of philosophy, logic and philosophy of science, and ethics. 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 at least 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. Requirements include passing, at a high level of performance, courses in metaphysics and epistemology, history of philosophy, logic and philosophy of science, and ethics. In addition, the student must pass a written comprehensive examination consisting of a dissertation area examination, a special area examination and a prospectus of the dissertation. Before taking the comprehensive examination, the student must show competence in French, German, Greek or Latin. The fourth year of graduate study is ordinarily spent in writing the doctoral dissertation.

Courses
Freshmen and Sophomores Only

36:1 Problems of Moral Reasoning 3 a.h.
Philosophical study of ethical theories and their relation to decision-making.

36:2 Problems of Logical Reasoning 3 a.h.
Philosophical study of correct and incorrect reasoning.

36:3 Problems of Political Philosophy 3 a.h.
Philosophical study of the good society and the relation of the individual to the state.
Physical Education and Dance
The University offers instruction in physical education on the west campus (Field House) and on the east campus (Halsey Gymnasi-um). The department on the west campus is formerly called the Department of Physical Education for Men and the department on the east campus, Department of Physical Education for Women. Courses and degree programs offered in the two departments are open to both men and women. The Dance Program is offered only on the east campus.

In its graduate program, the Department of Physical Education (Field House) offers opportunities for specialization in adapted physical education, administration and supervision, anatomy, biomechanics, evaluation and statistics, curriculum, exercise physiology, motor learning and therapeutics. On the undergradu- ate level, the teaching of physical education, the coaching of athletic teams and athletic training are emphasized.

The Department of Physical Education and Dance (Halsey Gymnasi-um) offers instruction in the teaching of physical education and coaching of sports on the undergraduate level, and on the graduate level emphasizes work in motor learning, sociology of sports, physical education teaching and corrections. The Dance Program and the women’s Intercollegiate Athletics Program are administered through this department.

The Dance Program offers a major in dance on both the undergraduate and graduate level. Students pursuing an advanced degree in physical education or in theatre may include dance as a part of their program of studies.

Physical Education and Dance—Halsey Gymnasi-um
Chairman: Margaret C. Fox
Degrees offered: B.A., B.S., M.A., Ph.D.

The Department of Physical Education and Dance (Halsey Gymnasi-um) offers instruction in the teaching of physical education, the coaching of sports and the teaching of dance on the profes- sional level. Majors in dance performance, pre-physical therapy, sports communications and a nonprofessional major in physical education are offered also. Graduate work leading to an M.A. is offered in physical education and dance and to a Ph.D. in physical education.

Physical Education Major

Undergraduate Curricula
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 many activities, so that the student is prepared to teach at advanced skill levels in that area or to go into coaching in a particular sport. If the student chooses, practical experience may be gained in coaching a particular sport.

Theoretical background is provided through antonational, kine- siological, physiological and health courses, with implications for the performance and teaching of activities. The emphasis is on preparation for teaching, but provision is made for entry in almost any graduate program in physical education if the student later wishes to undertake graduate work.

The student who plans to teach must meet certification require- ments (see "College of Education"). The teaching curriculum leads to either the B.A. degree or the B.S. degree. Each student must make application not later than the sophomore year for departmental recommendation to the College of Education and professional education courses, as well as continuation in the physical education curriculum the student has elected. Any student failing to maintain a grade-point average of 2.2, or having displayed marked inadequacies for teaching or a leadership role, may be dropped from the program. Transfer students coming into one of these programs are subject to all the requirements for students entering the program.

The pre-physical therapy curriculum leading to a B.S. degree 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, but not for teaching.

The Department also administers a non-professional major in health and physical education, known as General Studies in Health, Physical Education and Recreation. The purpose of this program is to give a background in health, physical education and recreation, not as a preparation for a career nor as a broad acquaintance with material relevant to personal and family recreation and healthful living. Each student’s program is indi- vidualized planned with an advisor following broad guidelines and oriented so the student’s objectives in selecting this major are

Physical Education Teaching Curriculum

28:1-4 Elementary Physical Education 4 s.h.
28:18 Senior Life Saving and Water Safety In- structor’s Course 4 s.h.
28:19 Orientation 4 s.h.
28:25-26 Coaching of Sports 8 s.h.
28:27 Teaching of Social Forms of Dance 8 s.h.
28:31-32 Officiating 8 s.h.
28:36 First Aid (or Red Cross Certification) 8 s.h.
28:40 Tennis 8 s.h.
28:41 Golf 8 s.h.
28:42 Badminton 8 s.h.
28:43 Volleyball 8 s.h.
28:47 Gymnastics 8 s.h.
28:48 Basketball 8 s.h.
28:49 Field Hockey 8 s.h.
28:50 Softball 8 s.h.
28:51 Field Hockey 6 s.h.
Basketball 1 s.h.
Modern Dance I 1 s.h.
Modern Dance II 1 s.h.
Swimming 1 s.h.
Track and Field 1 s.h.
Recreational Sports 1 s.h.
Anatomy 4 s.h.
Kinesiology 3 s.h.
Physiological Implications for Teaching Physical Education 3 s.h.
Correctives 3 s.h.
Measurement 2 s.h.
Organization and Administration of Physical Education 3 s.h.
History of Physical Education 1-2 s.h.
Interrelationships of Health and Physical Education 3 s.h.
Methods and Materials in Elementary School Physical Education 4 s.h.
Methods and Principles of Physical Education 3 s.h.
Independent Projects in Laboratory Practice (Coaching Practicum) 2-3 s.h.
Laboratory Practice in Secondary School 6 s.h.
Laboratory Practice in Elementary School 6 s.h.
Seminar Curriculum and Student Teaching 1 s.h.

For certification requirements in education, see "College of Education." For general requirements of the College of Liberal Arts, see "College of Liberal Arts."

Curriculum Leading to Endorsement in Coaching for Women
Coaching for Women's Sports 2 s.h.
Advanced Coaching 2 s.h.
Kinesiology 3 s.h.
Care of Athletic Injuries 2 s.h.
Physiological Implications for Teaching Physical Education 3 s.h.
Principles and Administration of Intercollegiate Women 2 s.h.
Methods and Materials in Elementary Physical Education 2 s.h.
Individual Projects in Laboratory Practice (Coaching Practicum) 2-3 s.h.

(For part of laboratory practice during the professional semester is waived on the basis of appropriate experience as a coach.)

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 an adviser on the basis of the student's objectives. Basic courses for all in the nonprofessional major are:

28.1 2, 3, 7, 40-57 or equivalent experience 7-8 s.h.
28.27 3 s.h.
104:61, 65 3-6 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 selected 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.

Graduate Programs

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 played and are still playing leadership roles in the profession, in their institutions and their communities.

The curricula assume previous education in the respective fields. A program is planned with the individual in light of his or her previous education and anticipated future career. Completion of the graduate degree usually leads to teaching, administration or supervision in the schools or in a university. Research preparation is provided for anyone who wishes a career in that area. All M.A. students do some type of research, though the options are highly variable.

The outstanding characteristics of the graduate programs are flexibility of program planning for the individual student, and diversity of areas of research which are available to the student. Attendance at both summer sessions and the academic year is helpful in obtaining full opportunities for variety of instruction.

The graduate student works primarily in the Department of Physical Education and Dance, 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 aged children, statistics and research, and adaptive-individualized programs. Others, such as sports communication, are possible. Occasionally an internship is possible in the specialization. The graduate student group is cosmopolitan and international in make-up.

A research laboratory is available in Halsey 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 20 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. Background is required in anatomy, kinesiology, physiology, health education, methods in physical education, administration of physical education and physical education techniques.

General Field Recommendations
*28:107 Correctives 3 s.h.
*28:113 Measurement 2 s.h.
*28:119 Methods and Principles of Physical Education 3 s.h.
*28:121 History of Physical Education 2 s.h.
28:205 Techniques of Research 3 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.

Electives
The remainder of the program is planned with the approval of the advisor and the chairman of the Department. A student may be permitted to take a non-thesis M.A. Such a curriculum requires a minimum of 30 semester hours plus a project instead of a thesis and specified courses. Permission must be received from the Graduate Committee of the Department.

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.

Prerequisites
Background is required in anatomy, kinesiology, physiology, health education, methods in physical education, administration of physical education and physical education techniques.

Tools of Research
Certain abilities are required as a basis for research and/or broad reading of international professional literature. The requirements are:

Reading ability in one foreign language.
The requirement may be satisfied by taking tests from the language department at Iowa certifying reading ability equivalent to the two semesters of study; or by passing the Graduate Record Examination in the language.

Statistical methods or computer science, which must be satisfied by passing a graduate course in statistical methods at The University of Iowa.

General Field Recommendations
28:106 Physiological Implications for Teaching Physical Education (or equivalent) 3 s.h.

*28:107 Correctives 3 s.h.
*28:113 Measurement 2 s.h.
*28:119 Methods and Principles of Physical Education 3 s.h.
*28:121 History of Physical Education 2 s.h.
28:201 Problems in Physical Education (unless student wrote a M.A. thesis) 0-4 s.h.
28:205 Techniques of Research 3-4 s.h.
28:215 Analysis of Human Motion 3 s.h.
28:219 Administration in Physical Education 3 s.h.
28:301 Seminar in Research 2 s.h.
28:401 Thesis 10 s.h.

*Not required of those having undergraduate courses. No more than 5 s.h. of these courses may be counted toward the Ph.D., and usually they will be taken for zero credit.

Specialization
At least 20 semester hours are required in one area or in two related areas at the discretion of the advisor. Suggested areas:

Anatomy
Administration
Correctives (Adaptives)
Curriculum
Elementary School Program
Health
Kinesiology (Biomechanics)
Measurement
Motor Learning
Motor Skills
Outdoor Education
Philosophy and History
Psychology of Sport
Physiology
Sociology of Sport
Sports Communication
Statistics and Research
Supervision

The dissertation should deal with some problem in the area of specialization (an additional 10 s.h.). The student is expected to complete the specialization by the time he or she writes the general comprehensive examination, and must also write a comprehensive examination in the area of specialization. The area comprehensive may be taken after writing the general comprehensive examination.

The student is required to take 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 needs.

Dance Major
The Undergraduate Program

Required:
28D:112 Rhythmic Analysis of Dance 2 s.h.
or
28D:129 Dance Accompaniment 2 s.h.
Physical Education and Dance

28:80 Anatomy 4 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 Company Class 2 s.h.
28:177 Labanotation 3 s.h.

24 s.h.

Prerequisites
12 hours from the following or related subjects in theatre, music, art.
*28:30-32 Teaching of Modern Dance 2-4 s.h.
*28:111 Children's Dance 3 s.h.
28:116 Dance in Education 2-3 s.h.
28:127-128 Dance Production 1-6 s.h.
28:170 Readings in Dance 3 s.h.
28:173-174 Advanced Choreography 3 s.h.
28:178 Labanotation 3 s.h.
28:181-182 Dance Company Class 1-4 s.h.
28:173-176 Theory and Criticism of Dance 3-6 s.h.

*Required of all dance majors in teaching credential. Also 28:37 First Aid or Red Cross certification is required of all majors planning to teach. See "Catalog of Education" for certification requirements for public school teaching. Dance majors must take at least one technique class each semester with a maximum of 16 hours allowed toward a degree. Included must be a minimum of 4 s.h. of ballet and 4 s.h. of modern.

Dance majors are required to enroll in 28:127 or 128 (Dance Production) for 1 s.h. each year when a full time student.

The M.A. Program
The M.A. degree in dance is awarded on completion of at least 30 semester hours of graduate work including thesis. The curriculum may lead to teaching of dance or to further work for a dance career.

Requirements
Auditions
Intermediate-level minimum modern or ballet 4 hours 28:123 Beginning Composition or equivalent
28:80-81 Anatomy-Kinesiology or equivalent
28:28 Teaching of Modern Dance or equivalent

Required
*28:112 Rhythmic Analysis of Dance 2 s.h.
*28:114-115 History and Appreciation of Dance 3-6 s.h.
*28:177 Labanotation 3 s.h.
28:173-174 Advanced Choreography 3 s.h.
28:175-176 Theory and Criticism of Dance 3-6 s.h.
28:401 Thesis 3-4 s.h.
28:205 Techniques of Research 3-4 s.h.

*No more than 6 s.h. allowed toward M.A. degree.

Faculty
The faculty represents diversified backgrounds and specializations. Abilities and interests are complementary. Most faculty members hold advanced degrees. Several bring educational backgrounds from abroad. All are experienced teachers. Graduate 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 Halsey Gymnasium, North Hall, 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 Halsey Gymnasium. The proximity of the river makes canoeing instruction feasible on a regular class schedule. The archery range is located along the river in a nature setting; outdoor fields and a track are available between the Field House and the Recreational Building. The University golf course is used for some classes and for the women's intercollegiate golf team.

Courses

Physical Education

Primarily for Undergraduates
28:110 General Physical Education 1 s.h.
28:112 Elective Physical Education 1 s.h.
28:114 Elective Physical Education 2 s.h.
28:116 Elective Physical Education 3 s.h.
28:118 Elective Physical Education 4 s.h.
28:122 Intermediate Physical Education 2 s.h.
28:124 Advanced Physical Education 3 s.h.
28:126 Physical Education 4 s.h.
28:130 Physical Education 1 s.h.
28:132 Physical Education 2 s.h.
28:134 Physical Education 3 s.h.
28:136 Physical Education 4 s.h.
28:141 Coaching Women's Sports 2 s.h.
28:151 Senior Life Saving and Water Safety Instructors Course 1-2 s.h.
28:160 Senior Life Saving and Water Safety Instructors Course 1-2 s.h.
28:161 Introductory to Exercise Physiology 1 s.h.
28:162 Introductory to Exercise Physiology 1 s.h.
28:163 Introductory to Exercise Physiology 1 s.h.
28:164 Introductory to Exercise Physiology 1 s.h.
28:165 Introductory to Exercise Physiology 1 s.h.
28:166 Introductory to Exercise Physiology 1 s.h.
28:167 Introductory to Exercise Physiology 1 s.h.
28:168 Introductory to Exercise Physiology 1 s.h.
28:169 Introductory to Exercise Physiology 1 s.h.
28:170 Introductory to Exercise Physiology 1 s.h.
28:171 Introductory to Exercise Physiology 1 s.h.
28:172 Introductory to Exercise Physiology 1 s.h.
28:173 Introductory to Exercise Physiology 1 s.h.
28:174 Introductory to Exercise Physiology 1 s.h.
28:175 Introductory to Exercise Physiology 1 s.h.
28:176 Introductory to Exercise Physiology 1 s.h.
28:177 Introductory to Exercise Physiology 1 s.h.
28:178 Introductory to Exercise Physiology 1 s.h.
28:179 Introductory to Exercise Physiology 1 s.h.
28:180 Introductory to Exercise Physiology 1 s.h.
28:181 Introductory to Exercise Physiology 1 s.h.
28:182 Introductory to Exercise Physiology 1 s.h.
28:183 Introductory to Exercise Physiology 1 s.h.
28:184 Introductory to Exercise Physiology 1 s.h.
28:185 Introductory to Exercise Physiology 1 s.h.
28:186 Introductory to Exercise Physiology 1 s.h.
28:187 Introductory to Exercise Physiology 1 s.h.
28:188 Introductory to Exercise Physiology 1 s.h.
28:189 Introductory to Exercise Physiology 1 s.h.
28:190 Introductory to Exercise Physiology 1 s.h.
Physical Education

28:29 Seminar: Health Concerns of Women 2 e.h.
28:30 Seminar: Philosophy of Curriculum Construction 2 e.h.
28:31 Seminar: Health Education Program 2 e.h.
28:32 Seminar: Supervision 2 e.h.
28:33 Seminar: Problems in supervision; open only to those with experience in supervision. 2 e.h.
28:34 Seminar: Philosophy of Physical Education 2 e.h.
28:35 Seminar: Spring. 2 e.h.
28:36 Seminar: Sociology of Sports 2 e.h.
28:29 Seminar: Improvement of Instruction in Elementary Physical Education 2 e.h.
28:30 Seminar: Current Developments in Physical Education 2 e.h.
28:31 Seminar: Comprehensive Physical Education 2 e.h.
28:32 Seminar: Individual Differences in Ability Classes 2 e.h.
28:33 Seminar: Motor-developmental activities in second and third grades; open only to those with experience in supervision. 2 e.h.
28:34 Seminar: The Law and Sport 2 e.h.
28:29 Seminar: Professional Writing 2 e.h.
28:30 Seminar: Critical review of physical education and related writing of all types; individual projects on writing for publication or presentation as professional meetings. 2 e.h.
28:30 Seminar: Physical Education Program Planning 2 e.h.
28:31 Seminar: Research on P.N. education. 2 e.h.
28:33 Seminar: Advanced study of muscle activity and laboratory techniques for analysis of muscle activity and motor performance. 2 e.h.
28:34 Seminar: Biomechanics 2 e.h.
28:30 Seminar: Visions: Instruction and Research in Physical Education 2 e.h.
28:31 Seminar: Neuromuscular Basis of Motor Function 2 e.h.
28:32 Seminar: Research in perception and kinesthesia involved in motor learning and skilled performance. 2 e.h.
28:33 Seminar: Motor Learning 2 e.h.
28:34 Seminar: Experience in Motor Learning 2 e.h.
28:35 Seminar: Observations in the exit level of physical education at various ages and levels of skill development. 2 e.h.
28:36 Seminar: Thesis. 2 e.h.
28:30 Seminar: Personal insurance. 2 e.h.

Dance

28:16 Modern Dance 1-4 e.h.
28:17 Intermediate Modern Dance 2 e.h.
May be repeated. 2 e.h.
28:18 Jazz 1-2 e.h.
Open to those who have completed requirement in physical education skills. 2 e.h.
28:19 Ballet 1-2 e.h.
Prerequisite: 28:1-9 or equivalent experience. 2 e.h.
28:20 Intermediate Ballet 2 e.h.
Open to those who have completed 28:1-9 and 28:2-10 or equivalent. May be repeated. 2 e.h.
28:21 Advanced Ballet 2 e.h.
Open to those who have completed 28:1-9 or equivalent. May be repeated. 2 e.h.
28:22 Social Dance Forms 1-2 e.h.
28:23 Teaching of Modern Dance 2-4 e.h.
28:24 Teaching of Modern Dance 2-4 e.h.

Physical Education-Field House

Penalty: professor Louis A. Alyea. 2 e.h.
Kansas M. Turner. 2 e.h.

28:36 Advanced Modern Dance 2 e.h.
28:37 Advanced Modern Dance 2 e.h.
28:38 Advanced Modern Dance 2 e.h.

For Undergraduates and Graduates

28:111 Children's Dance 2 e.h.
28:112 Rhythmic Analysis of Dance 2 e.h.
28:113 History and Appreciation of Dance 2 e.h.
28:114 History and Appreciation of Dance 2 e.h.
28:115 History and Appreciation of Dance 2 e.h.

28:116 Dance in Education 2-3 e.h.
Adaptation of these forms as a part of different levels of physical education. 2 e.h.
28:117 Beginning Composition 2 e.h.
28:118 Intermediate Composition 2 e.h.
28:119 Dance Techniques 2 e.h.
28:120 Dance Techniques 2 e.h.
28:121 Workshop: Artist in Residence 2 e.h.
28:122 Dance Production 2 e.h.
28:123 Dance Production 2 e.h.
28:124 Dance Production 2 e.h.
28:125 Dance Production 2 e.h.
28:126 Dance Production 2 e.h.

28:127 Dance Production 2 e.h.
28:128 Dance Production 2 e.h.

28:129 Dance Production 2 e.h.
28:130 Dance Production 2 e.h.
28:131 Dance Production 2 e.h.

28:132 Reading Room 2 e.h.
28:133 Dance Company Class 2 e.h.
28:134 Dance Company Class 2 e.h.
28:135 Dance Company Class 2 e.h.
28:136 Dance Company Class 2 e.h.
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Undergraduate Programs

Preparation for Teaching and Coaching

The Bachelor of Science degree program in teaching and coaching prepares students for teaching physical education and related subjects in elementary and secondary schools, and for coaching athletic teams. Through the required major sequence in teaching and coaching has led to a high level of competition among applicants for teaching positions, graduates in physical education from this department have had a high percentage of placement.

Program requirements:

27:11 Introduction to Physical Education
27:21-22 Teaching of Recreational Sports I-II
27:31 Teaching of Gymnastics

One of these seven coaching courses:

27:32 Coaching of Gymnastics
27:33 Coaching of Football
27:34 Coaching of Basketball
27:35 Coaching of Track and Field Athletics
27:36 Coaching of Basketball
27:37 Coaching of Competitive Swimming
27:39 Coaching of Wrestling
27:37 Teaching of Swimming
27:53 Human Anatomy
27:56 First Aid
27:57 Introduction to Athletic Training
27:103 Administration of Physical Education and Athletics
27:105 Adapted Physical Education
27:107 Biomechanics of Physical Education
27:108 Introduction to Human Perceptual-Motor Performance
27:141 Elementary Exercise Physiology
72:13 Introduction to Human Physiology
63:101 Health Science I
63:101 Health Science I

Courses required for certification in physical education:
76:71-72 Methods and Materials in Elementary School Physical Education
76:72 Social Forms of Dance
79:75 Educational Psychology and Measurement
75:51 Pre-education
75:100 Introduction to Secondary School Teaching
75:145 Methods in Secondary Physical Education
76:187 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 pedagogy. 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 needs to meet certification requirements for teaching in the public schools, this curriculum offers considerable latitude in the choice of electives to fit individual interests and needs.

Foundation course requirements:
4:1-4 Principles of Chemistry I-II
4:8 Elementary Chemistry Laboratory
4:121 Organic Chemistry I
22M:2-3 Mathematical Techniques I-II
22M:20 Elementary Functions
29:1-2 College Physics

Professional courses in physical education and related areas required:
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
75:145 Methods in Secondary Physical Education
72:13 Introduction to Human Physiology
79:102 Exercise Physiology
99:120 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 junior high and secondary school levels, the following courses must be satisfactorily completed:
27:93 Human Anatomy
27:56 First Aid
27:57 Introduction to Athletic Training
27:103 Administration of Physical Education and Athletics
27:197 Biomechanics of Physical Education
27:108 Introduction to Human Perceptual-Motor Performance
75:141 Elementary Exercise Physiology
88:192 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 wish to become certified as athletic trainers at either the secondary school level as a part of their regular teaching duties, or at the college and university levels. The courses required are designed to meet the standards for certification by the National Athletic Trainers Association and include:

17:41 Contemporary Nutrition
or
17:142 Nutrition
31:1 Elementary Psychology
79:75 Educational Psychology and Measurement
72:13 Introduction to Human Physiology
63:101 Health Science I
27:53 Human Anatomy
17:56 First Aid
27:27 Introduction to Athletic Training
27:05 Adopted Physical Education
27:107 Biomechanics of Physical Education
27:141 Elementary Exercise Physiology
27:171 Medical Supervision of Athletics
27:182 Evaluative Techniques in Athletic Training
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 joint-appointment of resources at Iowa. Within a six-block radius are located the Field House (which houses this department), the College of Medicine, the University Hospital, the Veterans Hospital, the Psychopathic Hospital and the University Hospital School for handicapped and mentally retarded children.

The proximity of these facilities, together with the close working relationships between the faculty of this department and the faculties of various departments in the College of Medicine, offer a unique setting for a pre-physical-therapy program. Because there is a rapidly increasing demand for physical therapists who are willing to serve as athletic trainers for school, college and university teams, the pre-physical-therapy program in physical education renders a valuable service to schools and colleges, as well as to the paramedical aspects of physical therapy.

Students who wish to complete the requirements for admission to the training program in physical therapy must complete the following courses:

27:21-22 Teaching of Recreational Sports I-II
27:31 Teaching of Gymnastics
27:37 Teaching of Swimming
27:53 Human Anatomy
31:56 First Aid
21:57 Introduction to Athletic Training
27:36-39 Practicum in Special Physical Education
27:102 Administration of Physical Education and Athletics
27:105 Adopted Physical Education
27:107 Biomechanics of Physical Education
27:108 Introduction to Human Perceptual-Motor Performance
27:141 Elementary Exercise Physiology
27:23 Advanced Anatomy and Physiology
4:1:4 Principles of Chemistry I and II

Graduate Program:

M.A. Without Thesis

The program leading to the M.A. degree without thesis is designed as a terminal unit of advanced study for majors in 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 in the counseling of interscholastic and intercollegiate athletic teams. Particular attention is given to problems associated with teaching and coaching in public schools and community college 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.

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<tr>
<th>Course</th>
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<tr>
<td>Human anatomy</td>
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<td>Human physiology</td>
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<tr>
<td>Personal hygiene (equivalent)</td>
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<td>Administration of physical education and athletics</td>
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<td>Methods in physical education</td>
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<tr>
<td>Practice teaching (equivalent)</td>
<td>2</td>
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<tr>
<td>Teaching of gymnastics</td>
<td>1</td>
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<td>Teaching of swimming</td>
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<td>Coaching (one sport)</td>
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<tr>
<td>Electives in physical education and related areas</td>
<td>15</td>
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Total 30 hours

Credit may be given for experience and competence in techniques when such competence is demonstrated by examination.

Graduate requirement:
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, including 27:105 Advanced Physical Education. At least one course must be selected from each of these three groups:

Growth I
27:105 Advanced 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 Human Perceptual-Motor Performance

Group III

27:157 Biomechanics of Athletics
27:241 Scientific Principles of Physical Conditioning

M.A. with Thesis

The study program leading to the M.A. with thesis is designed primarily 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. An attempt is made to thoroughly acquaint candidates 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.

- Human physiology 3 s.h.
- Human anatomy 2 s.h.
- Methods in physical education or Administration of physical education and athletics 3 s.h.
- Intermediate algebra (or equivalent) 3 s.h.
- Teaching of recreational sports (or equivalent) 4 s.h.
- Practice teaching (or equivalent) 2 s.h.
- Electives in physical education and related areas 13 s.h.
- Total 30 s.h.

In addition to these courses, undergraduate courses in chemistry, physics, zoology, mathematics and the physiology of exercises 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 thesis.

27:102 Adapted Physical Education
27:257 Biomechanics of Human Motion
27:267 Advanced Measurement and Evaluation in Physical Education
27:308 Human Perceptual-Motor Performance
27:337 Seminar: Research in Physical Education Curriculum
27:401 Seminar in Scientific Writing

27:402 Research Methods in Physical Education
27:403 Seminar: M.A.
27:404 Thesis: M.A.
27:102 Exercise Physiology
77:143 Introduction to Statistical Methods
or
63:161 Introduction to Biostatistics

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 to problems in physical education and athletics, and knowledge in depth in at least one of the accepted areas of specialization in physical education.

The areas of specialization offered in physical education are 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 learning, and therapeutics.

A broad background in all areas of physical education, together with a working knowledge of appropriate research techniques, is provided through the required courses in the M.A. with thesis curriculum and the core of courses required for all Ph.D. candidates. With the exception of six semester hours of electives, 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 or her 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—Field House. Preferences 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 or her 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 of the Department of Physiology and Biophysics in the College of Medicine. Such candidates graduate with a minor 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.

Prerequisites:
Completion of the requirements for the M.A. with 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, the equivalent of the M.A. thesis must be completed before taking the comprehensive examination for the Ph.D. degree.

Requirements:
The student must complete the core requirements and the require-
ments for at least one area of specialization.

The core requirements include 27-405 Thesis: Ph.D., and either
7P-242 Selected Applications of Statistical Techniques or 63:161
Introduction to Biostatistics.

The foreign language requirement differs for each area of
specialization. All candidates not required to demonstrate profi-
ciency in a foreign language must satisfactorily complete 7P-248
Data Processing or 25C:100 Introduction to Computing with
FORTRAN.

A minimum of 30 semester hours of required and elective
courses must be completed in the candidate's area of specializa-
tion.

The courses required by area of specialization are:

Adapted Physical Education
7U:130 Exceptional Children
27:201 Research-Adapted Physical Education (may be re-
peated)
27:205 Adapted Physical Education: Special Topics and
Research
60:109 Human Anatomy and Neuroanatomy
60:110 Neurobiology and Behavior

Administration and Supervision in Physical Education
7D:201 Foundations of School Administration
27:201 Research: Administration and Supervision
27:203 Psychology of Sport
or
27:160 Behavior Management in Physical Education Athletic
ics
27:207 Advanced Administration of Physical Education
27:227 Advanced Administration of Athletics
27:240 Professional Preparation in Physical Education

Anatomy
37:102 Principles of Modern Embryology
27:153 Advanced Anatomy and Kinesiology
60:103 Gross Human Anatomy for Medical Students
or
60:109 Human Anatomy
and
60:110 Human Anatomy and Neuroanatomy
One of these:
60:105 Microscopic Anatomy for Medical Students
37:112 Cell, Tissue and Organ Biology
60:221 Microscopic Anatomy for Graduate Students

Biomechanics
527:190 Readings in Energy Engineering (include statics;
dynamics; mechanics of fluids, transfer processes and
deformable bodies)
3:120 Fundamentals of Laboratory Instrumentation
60:109 Human Anatomy and Neuroanatomy
27:201 Research-Biomechanics
27:357 Research Techniques in Biomechanics

Curriculum in Physical Education
7E:300 Elementary Education
or
7E:291 Secondary School Curriculum
7P:332 Seminar: Educational Psychology II: Psychology of
Learning
7X:301 Current issues in Education
27:160 Perceptual Motor Skill Development in Children
27:201 Research-Curriculum (may be repeated)
27:240 Professional Preparation in Physical Education
27:338 Seminar: Models and Theory in Curriculum
28:243 Philosophical Basis of Curriculum Construction

Exercise Physiology
72:202 Advanced Exercise Physiology
72:151 Intermediate Physiology
99:130 Metabolism

Measurement and Evaluation
25C:100 Introduction to Computing with FORTRAN
7P:243 Statistical Methods, and
7P:244 Correlation Methods
or
225:153-4
7P:246 Introduction to Mathematical Statistics I and II
7P:254 Design of Experiments
7P:255 Construction and Use of Classroom Tests as Eval-
uation Instrument
7P:257 Educational Measurement and Evaluation
7P:367 Seminar: Research in Measurement and Evaluation
in Physical Education (may be repeated)

Motor Performance and Learning
27:201 Research-Motor Learning (may be repeated)
27:312 Selected Issues in Information Processing and in
Motor Control
27:314 Seminar in Motor Behavior Research
31:119 Human Memory, Learning and Conceptual Proces-
ses
31:155 Human Engineering
31:223 Information Processing in Psychology

Therapeutics
101:327 Research in Therapeutics
101:214 Principles of Human Motion II
One of these:
72:110 Neurobiology and Behavior
72:271 Advanced Cardiovascular Physiology
72:247 Advanced Respiratory Physiology
One of these:
60:105 Microscopic Anatomy for Medical Students
59:202 Readings in Mechanics
72:202 Advanced Physiology and Exercise
72:281-4 Advanced Neurophysiology

Admission Requirements
M.A. with and without Thesis
For admission to the program leading to the M.A. degree with or
without thesis, see the admissions requirements prescribed by
the Graduate College.

Ph.D. Program
The student is admitted to the study program leading to the Ph.D.
degree on the basis of his or her grade-point average on the work
completed for the M.A. or M.S. degree, and his or her score on
the Graduate Record Examination (M.A. Test). To be consid-
ered for admission, the student must have earned a grade-point average of 3.0 or higher on all graduate work undertaken.

Facilities

The construction of the mammoth new Recreation Building, along with the recent refurbishing of the Field House, provide excellent facilities for use in the physical education skills program, in the undergraduate and graduate instructional programs, and for student participation in intramural sports, recreational activities and athletics.

Research laboratories for physiology of exercise, stress, motor performance and biomechanics are located in the Field House and provide excellent facilities for instruction and research at both the undergraduate and graduate levels.

Because of our cooperative efforts with other departments to facilitate specialization, physical education students use additional special facilities in other departments on the campus.

Courses

Primarily for Undergraduates

27.1135 Physical Education (1 a.h.)
Elective for students who have satisfied requirements for physical education skills (see "Peterson's").

27.2515 Physical Education (1 a.h.)
Concentration in 27.1.

27.2545 Physical Education (1 a.h.)
Concentration in 27.3.

27.5515 Physical Education (1 a.h.)
Concentration in 27.4.

27.5525 Physical Education (1 a.h.)
Concentration in 27.5.

27.5535 Physical Education (1 a.h.)
Concentration in 27.6.

27.5545 Physical Education (1 a.h.)
Concentration in 27.7.

27.5555 Physical Education (1 a.h.)
Concentration in 27.8.

27.5565 Elective Physical Education (1 a.h.)
Open to any student who does not wish academic credit or who desires to enroll a class for only practical instruction.

27.7155 Introduction to Physical Education (1 a.h.)
Open elective lecture on historical and educational aspects of physical education. First semester.

27.7255 Social Forms of Dance (1 a.h.)
Same as 27.7355. First semester.

27.7355 Teaching of Recreational Sports I (2 a.h.)
Dedicated to teaching, organizing groups for participation. First semester.

27.7455 Teaching of Recreational Sports II (2 a.h.)
Concentration of 27.73. Second semester.

27.7555 Teaching of Gymnastics (2 a.h.)
Teaching techniques of conditioning exercise, elementary apparatus and tumbling exercises.

27.7655 Coaching of Gymnastics (2 a.h.)
Prerequisite: High school varsity experience or equivalent.

27.7755 Coaching of Football (1 a.h.)
Prerequisite: High school varsity experience or equivalent. Second semester.

27.7855 Coaching of Baseball (2 a.h.)
Prerequisite: High school varsity experience or equivalent. Second semester.

27.7955 Coaching of Track and Field Athletics (2 a.h.)
Prerequisite: High school varsity experience or equivalent. First semester.

27.8055 Coaching of Basketball (2 a.h.)
Prerequisite: High school varsity experience or equivalent. First semester.

27.8155 Coaching of Softball (2 a.h.)
Prerequisite: High school varsity experience or equivalent.

27.8255 Coaching of Competitive Swimming (2 a.h.)
Prerequisite: High school varsity experience or equivalent. Second semester.

27.8355 Coaching of Water Polo (2 a.h.)
Prerequisite: High school varsity experience or equivalent. Second semester.

27.8555 Coaching of Wrestling (2 a.h.)
Prerequisite: High school varsity experience or equivalent. First semester.

27.8655 Coaching of Football, Basketball, and the like (2 a.h.)

27.8755 Administration of Intramural Athletics (2 a.h.)

27.8855 Human Anatomy (2 a.h.)

27.8955 First Aid (2 a.h.)

27.9055 Introduction to Athletic Training (2 a.h.)
Prerequisite: 27.35. First semester.

27.9155 Practicum in Special Physical Education (3 a.h.)
Laboratory experience in adapted physical education, exercise therapy and corrective therapy. Prerequisites: 27.21 and 27.25. First semester.

27.9355 Practicum in Special Physical Education (2 a.h.)
Laboratory experience in adapted physical education. Second semester.

27.9455 Special Project (2 a.h.)

27.955 Leadership Training I (1 a.h.)
Course prerequisite before registering.

27.965 Leadership Training II (1 a.h.)
Course prerequisite before registering.

27.975 Leadership Training III (1 a.h.)
Course prerequisite before registering.

For Undergraduates and Graduates

27.1105 Issues and Trends in Physical Education and Athletics (2 a.h.)
First semester.

27.1155 Administration of Physical Education and Athletics (2 a.h.)
Second semester.

27.1205 Athletic Administration (2 a.h.)
Prerequisite: 27.10. Second semester.

27.1255 Scientific Aspects of Sports Skills (3 a.h.)
Saturday and Evening Summer Program.

27.1275 Biomechanics of Physical Education (2 a.h.)
First semester.

27.1285 Introduction to Human Perceptual-Motor Performance (2 a.h.)
Second semester.

27.1305 Workshop in Growth and Development (1 a.h.)
Correspondence course.

27.1315 History of Physical Education (2 a.h.)

27.1335 Track and Field Athletics (2 a.h.)

27.1345 Workshop in Advanced Athletic Coaching (1 a.h.)
Correspondence course.

27.1355 Advanced Theory and Techniques of Swimming and Diving (2 a.h.)
First semester.

27.1365 School Physical Education Programs (2 a.h.)
Same as Education 27.16. First semester.

27.1405 Workshop: Physiological Effects of Activity (1 a.h.)
Course prerequisite.

27.1415 Elementary Exercise Physiology (2 a.h.)
Prerequisite: 27.15. First semester.

27.1445 Knowledge and Performance Tests in Physical Education (3 a.h.)
First semester.

27.1455 Advanced Anatomy and Physiology (3,5 a.h.)
Emphasis on preparation for teaching anatomy and physiology at the undergraduate level. Second semester.

27.1465 Instructional Methods in Physical Education (3 a.h.)
Same as Education 27.16. Second semester.

27.1475 Advanced Instruction in Selected Activities (2 a.h.)
Division of Cooperative Education.

27.1485 Sports and Movement for Drama (1 a.h.)
May be taken.

27.1495 Biomechanics of Athletics (3 a.h.)
Prerequisite: 27.10. Second semester.

27.1505 Physical Education for Elementary Schools (2 a.h.)
Same as Education 27.14. First semester.
Undergraduate Majors who plan to pursue graduate study in physics are advised to take 29:171-172 Mathematical Methods of Physics, and to go beyond the minimum requirements listed above to the greatest feasible extent, including further work in mathematics.

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

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 or advanced study in astrophysics, radio astronomy or space astronomy.

The following courses or their equivalents are required for the Bachelor of Arts degree in astronomy:

| 22M:25-28 | Calculus I, II, III and Introduction to Linear Algebra | 16 s.h. |
| 22M:35-38 | Engineering Calculus I-IV | 16 s.h. |

or

| 29:17-19 | Introductory Physics I-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 | Mathematical Methods of Physics | 4 s.h. |
| 29:137 | Astronomical Laboratory | 2 s.h. |
| 29:191 | 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, and 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 general requirements of the College of Liberal Arts, see "College of Liberal Arts."

Graduate Program

The master of science in physics with or without thesis is usually awarded by the College 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.

As M.S. degree is not prerequisite to the Ph.D.

The Department of Physics and Astronomy coproduces 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 advisor who will assist in preparing a plan of study and in guiding the student's progress. A graduate student becomes a candidate for an advanced degree in physics or astronomy only after passing a qualifying examination in all principal areas of the subject on 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. After a student has selected a research specialty, the appropriate thesis or essay advisor then becomes the candidate's general advisor and the chairman of the final examination committee.

For the general admission and degree requirements, see "Graduate College."

Master of Science Degree in Physics

The M.S. degree is offered with thesis or without thesis. Either degree may be an intermediate step toward a Ph.D. degree, or it may be a terminal degree. The final examination in either case is an oral one conducted by a committee of three members of the graduate faculty appointed at the start of the Graduate College.

The program for the M.S. degree with thesis requires 30 semester hours of graduate work and a thesis based on an original experimental or theoretical investigation by the candidate. No more than six of the minimal 30 semester hours may be for research (29:281 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 (29:230 Individual Critical Study).

Up to one-third of the graduate program may be in relevant scientific fields other than physics and mathematics, e.g., chemistry, astronomy, engineering, etc.

The candidate for either of the M.S. degrees must have satisfactorily completed the following courses or their equivalents as an undergraduate or a graduate:

| 29:115 | Intermediate Mechanics | 3 s.h. |
| 29:116 | Introductory Quantum Mechanics | 3 s.h. |
| 29:137 | Optics | 3 s.h. |
| 29:118 | Statistical Physics | 3 s.h. |
| 29:129-130 | Electricity and Magnetism | 6 s.h. |
| 29:132 | Advanced Laboratory | 4 s.h. |
| 29:171-172 | Mathematical Methods of Physics | 6 s.h. |
| 29:191 | Atomic Physics | 3 s.h. |

Honors

Selected junior and senior majors may take six to eight semester hours of 29:99 Honors Seminar and conduct an investigation with the guidance of a faculty member as part of their program for the degree Bachelor of Arts with Honors in Physics or Astronomy.
29:192 Nuclear Physics 3 a.h.

The student's plan of study should provide for as much advanced work as possible and a period of preparation before the degree will be recommended for the Ph.D. degree until he or she has written the dissertation is proper form for final publication and has submitted it, with the approval of the research advisor, for publication to a standard scientific journal of wide distribution.

Master of Science Degree in Astronomy

The M.S. degree is offered with thesis or without thesis. The general requirements are the same as for the M.S. in Physics (see above). The course requirements are as follows:
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.
29:119-120 Introduction to Stellar Astrophysics I-II 6 s.h.
29:121 Solar System Astrophysics 3 s.h.
29:122-130 Electricity and Magnetism 6 s.h.
29:133 Advanced Laboratory 2 s.h.
29:137 Astronomy 2 s.h.
29:171-172 Mathematical Methods of Physics 6 s.h.
29:191 Atomic Physics 3 s.h.

A student who intends to continue for a Ph.D. in physics with an astrophysics specialization should take the following courses as soon as possible:
29:131 Radio Astronomy 3 s.h.
29:132-133 Theoretical Astrophysics I-II 6 s.h.
29:234 Stellar Structure and Evolution 4 s.h.
29:235 Special Topics in Astrophysics 2 s.h.
29:263 Seminar: Astrophysics 3 a.h.

Doctor of Philosophy Degree in Physics

The program of study for the Ph.D. degree in 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 and defense of a written dissertation based on this work.

All candidates for the Ph.D. must take at least 77 semester hours of graduate courses in the Department, excluding 29 220, 29 270, and seminars. The following minimum program is recommended as preparation for the comprehensive examinations:
29:191-193 Atomic Physics, Nuclear Physics and Introductory Solid State Physics 9 s.h.
29:205 Classical Mechanics 3 s.h.
29:212 Statistical Mechanics 3 s.h.
29:212-214 Classical Electrodynamics 6 s.h.
29:245-246 Quantum Mechanics I-II 6 s.h.

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 30 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 is proper form for final publication and has submitted it, with the approval of the research advisor, for publication to a standard scientific journal of wide distribution.

Research

The Department has an excellent library and a number of well-equipped laboratories and observatories. An IBM 360/65 digital computer and the associated facilities of the University Computer Center are available for research by students and staff of the Department. Several other smaller computers are available within the Department. The central machine shop is fully equipped and staffed with skilled instrument makers and 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, inorganic 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. Requirements should be directed to the head of the Department.

Courses

Physics

Prerequisites and corequisites are specified as guides and may be waived by the instructor.

An elementary course may not be repeated for credit or for quality points if the student has already completed a higher level course for which the elementary course, or its equivalent, is a prerequisite.

Courses 29 1-2, 29 3, 29 17-18, 29 25, 29 30, and/or 29 61-62 are accepted toward the College of Liberal Arts core requirement in the Natural sciences.

Primarily for Undergraduates

29 1 College Physics 4 s.h.

Core in foundation for biological, premedical and pharmacy students and others interested in elementary physics; descriptive lectures, laboratory and problem work in mechanics, heat and optics. Prerequisite or corequisite: Mathematics 220 1 or equivalent. Offered both semesters and summer session.

29 2 College Physics 4 s.h.

Electricity, magnetism, light and modern physics. Continuation of 29 1, which is prerequisite.

29 3 Basic Physics 4 s.h.

Quantitative treatment of mechanics, electricity, heat, fluids and gases with emphasis on useful applications. Meets one-semester physics requirements.

29 4 Imaginary Physics 3 s.h.

Three lectures per week; no laboratory. Taught primarily for students interested in advanced fields. This is a one-semester course in physics covering mechanics, properties of fluids, heat, electricity and magnetism, electrical instruments, sound, light and modern physics. Prerequisite: High school algebra.

29 7 Practical Electricity and Electronics 2 s.h.

This course covers some of the basic principles and practical experience necessary in
Physics and Astronomy

...copper with our environment which is filled with electrical and electronic devices. These include the source of energy, internal combustion, electromagnetic, gaseous and electrical devices. After this, we move on to the study of quantum theory, which deals with the behavior of matter and light at the atomic and subatomic level. Finally, we explore the behavior of mass, light, and electricity, and their effects on various systems...
Political Science

Department chairman: Peter C. Stee

Political Science

Department chairman: Peter C. Stee

The program in political science deals with general principles of human behavior and organization which enable one to understand and explain social 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; and 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.

2. Students who transfer from other colleges or universities must take at least nine of the 27 semester hours of work in political science at The University of Iowa.

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 colleges.

Teaching Major

Undergraduates planning to teach in the social sciences with an emphasis on political science must meet the following requirements:

1. At least 20 semester hours of work in political science, including 30:1 Introduction to American Politics or 30:10 The American Political System; and two of these introductory courses: 30:10 Introduction to Political Behavior; 30:11 Introduction to Political Theory; 30:12 Introduction to Comparative Politics; and 30:13 Introduction to World Politics.

2. Eight semester hours of courses in each of two of the following areas: American history, anthropology, economics, geography, psychology, and sociology.

3. Completion of the sequence of professional education courses leading to certification (see "College of Education").

Honors in Political Science

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. Honors students must take Honors Introduction to Political Inquiry (30:181), and must complete at least two semesters of work in the advanced Honors Seminar (30:47-188) with a grade of B or better each semester. In some cases, the Honors advisor 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.

Master of Arts in Public Affairs

Although all students in the public affairs program must take the core courses indicated in the shaded boxes below, elective opportunities make possible several areas of specialization. Students interested in public administration may use their elective credits to take further courses in government, state, or financial administration; administrative theory and behavior; or quantitative analysis. Students interested in public policy analysis may use their elective credits to take courses in quantitative research methods, and courses dealing with substantive policy fields such as economic policy, health policy, natural resources policy, or social policy. This is a non-major program. The student must complete at least 36 hours of coursework with at least a 3.0 grade-point average, and must pass a written final examination. Although the
schedule suggested below implies completion within a year, the program is self-critically flexible to accommodate students who may require additional time to meet all its requirements.

| Fall Semester | 30:210 | American Public Policies | 3 s.h. |
|               | 30:220 | Administrative Theory and Public Policy | 3 s.h. |
|               |         | Electives | 9 s.h. |

| Spring Semester | 30:121 | Urban Administration | 3 s.h. |
|                 | 30:523 | Comparative Public Policy Analysis | 4 s.h. |
|                 | 6E:119 | Economics of the Government Sector | 3 s.h. |
|                 |         | Electives | 5 s.h. |

| Summer Semester | 30:383 | Internships in Public Policy and Administration | 3 s.h. |
|                 | 30:384 | Practicum in Public Policy and Administration | 3 s.h. |
|                 |         | Elective | 3 s.h. |

| Total |        | 36 s.h. |

Students choose electives on the basis of their own interests and career objectives, in consultation with the director of the program. Students are expected to choose at least one elective numbered 200 or above.

In addition to a wide range of elective options in political science, the student may choose electives including economics, business administration, urban and regional planning, sociology, geography, higher education, social studies education, civil engineering, and law.

Master of Arts with Thesis

Except for the M.A. in public affairs and the M.A. offered under a joint program with the College of Law (see "College of Law"), the department normally offers the M.A. only as a preliminary step toward the Ph.D. It does not recommend a general M.A. program for students who do not intend to continue for the Ph.D.

The M.A. degree is normally obtained by completing at least 30 semester hours with a grade-point average of at least 3.0, submitting a thesis, and passing a final oral examination. No more than eight semester hours of credits for thesis preparation will be counted toward the 36-semester-hour minimum requirement for the general M.A.

The final oral examination covers both thesis and coursework.

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 thesis 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 when a graduate school in residence and 72 semester hours of graduate-level credit, including work for the M.A. and transfer credits; success of the M.A. degree; at least one semester each of special supervised training in teaching and in research; demonstrated commitment to 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 at least 30 hours of graduate study. Candidates for the Ph.D. take written examinations in three of these areas:

American Politics
Comparative Politics
International Politics
Political Theory
Public Policy and Administration
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 must be accepted by at least two members of the dissertation committee. The comprehensive examination must be completed and defended in the oral examination, which deals also with 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 teaching in teaching and in research. This instruction is normally given in association with the student's service as a teaching or research assistant.

Dissertation

Not more than 30 semester hours of credits are granted for the preparation of dissertations, and students may 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 Undergraduate Study in Political Science. For general graduate admission and degree requirements, see "Graduate College." 

Special Facilities
The Laboratory for Political Research provides logical 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 quantitative 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.

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 punch cards, and a course-slicer. The laboratory also serves the College of Liberal Arts Mini-Computer Terminal Center for the social sciences, which houses terminals for access to one of the University's Hewlett-Packard 2000F educational computers.

The Comparative Legislative Research Center of the Department of Political Science was established to promote comparative studies of legislative institutions and behaviors 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. The center also publishes the Legislative Studies Quarterly.

Courses

Introductory Undergraduates

101 Introduction to American Politics 4 s.h.

102 Introduction to Political Science 4 s.h.

Basic elements and principles of politics. Includes an introduction to the American political system and basic political concepts and institutions. Focuses on the American constitutional system. Each year.

105 Introduction to Political Behavior 4 s.h.

Patterns and bases of political attitudes and behavior in public opinion, governmental institutions, and political institutions. Each year.

106 Introduction to Political Theory 4 s.h.

Introduction to political theory. Each year.

108 Introduction to Public Administration 4 s.h.

Introduction to public administration. Each year.

110 Introduction to Environmental Politics 4 s.h.

Introduction to environmental politics. Each year.

112 Introduction to International Law 4 s.h.

Introduction to international law. Each year.

114 Introduction to International Relations 4 s.h.

Introduction to international relations. Each year.

116 Introduction to Public Policy 4 s.h.

Introduction to public policy. Each year.

118 Introduction to Public Administration 4 s.h.

Introduction to public administration. Each year.

120 Introduction to Public Administration 4 s.h.

Introduction to public administration. Each year.

122 Introduction to Public Administration 4 s.h.

Introduction to public administration. Each year.

124 Introduction to Public Administration 4 s.h.

Introduction to public administration. Each year.

126 Introduction to Public Administration 4 s.h.

Introduction to public administration. Each year.

128 Introduction to Public Administration 4 s.h.

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130 Introduction to Public Administration 4 s.h.

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214 Introduction to Public Administration 4 s.h.

Introduction to public administration. Each year.

216 Introduction to Public Administration 4 s.h.

Introduction to public administration. Each year.

218 Introduction to Public Administration 4 s.h.
30:302 Advanced Research Methods 4 a.h.

Surveying: analytical techniques; statistical models, and relationship between hypothesis testing.

30:303 Quantitative Methods in Public Policy Analysis 4 a.h.

Survey of quantitative techniques useful in analyzing public policy, including the measurement of benefit-cost analysis, survey, and statistical survey.

30:304 Problems in Public Administration 1 a.h.

Solved issues in public administration; may be repeated with consent of instructor. Same as 30:331.

30:311 Administrative Theory and Practice 1 a.h.

Lectures on policy, political and organizational behavior, and complex organizations. May apply in study of administrative agencies of government.

30:312 Financial Administration 4 a.h.

Budgetary and accounting aspects of governmental financial operations at national, state, and local levels; formation, management, and execution of governmental budgets; governmental control of financial operations; intergovernmental fiscal relations.

30:342 Comparative Public Policy Analysis 4 a.h.

Regional study of theories of public policy formation (decision theory, systems theory, theory of political economy); quantitative research methods for analyzing policy processes and outcomes; and research applications in North American and Western European nations.

30:343 Seminar in Urbanization 4 a.h.

Problems and consequences of urbanization; political, economic, and social writs of metropolitan areas. May be repeated with consent of instructor. Same as 3:4:296:3:5:339, 3:5:339, and 3:5:332.

30:346 Problems in Political Theory 4 a.h.

Selected problems of prescriptive and explanatory political theory; may be repeated with consent of instructor.

30:348 Psycho-Biological Bases of Political Behavior 4 a.h.

Survey of principles of human behavior established in the-behavioral sciences and their conceptual and methodological implications for political science; application to selected problems in political behavior research.

30:350 Problems of Comparative Politics 4 a.h.

Selected problems in comparative analysis of politics; may be repeated with consent of instructor.

30:351 Political Systems of the Third World 1 a.h.

Selected Western European political systems or political phenomena common to several such regions.

30:352 European Systems in European Political Systems 1 a.h.

Research seminar on selected topics of Soviet and East European politics; permission of instructor required.

30:353 Asian Political Systems 1 a.h.

Comparative analysis of economic, social, and cultural types of government in Asia, special emphasis on leadership development, social control, political participation.

30:444 Latin American Political Systems 4 a.h.

Selected political topics in Latin America (political parties, church, students, military); intended primarily for students with little or no previous knowledge of Latin America.

30:347 Social and Political Change 1 a.h.

An analytical review of social and political change in Europe, the United States, and Latin America, including events, consequences, and methods of mass political change; development of new techniques may be repeated with consent of instructor.

30:450 Political Socialization 4 a.h.

Development of political role, attitudes, emotions; emphasis on theoretical and comparative approaches.

30:456 Public Opinion and Political Behavior 4 a.h.

Analysis of patterns of attitudes and beliefs in mass society, under study for behavior; functioning of political systems.

30:450 Political Parties 1 a.h.

Systematic evaluation of role, organization, membership, leadership, and functions of political parties or other political systems; may be repeated with consent of instructor.

30:352 Politics and the Leadership 1 a.h.

Study of leadership, power, attitudes, and behavior of political leaders, geographical areas may be repeated with consent of instructor.

30:353 The Propaganda 1 a.h.

Analysis of styles and sources of executive: history, movements, behavior, role, comprehension, power, and structures with other institutions.

30:354 Legislative Process and Political Behavior 1 a.h.

Analytical and evaluative analysis of legislative institution, processes, and behavior, which may focus on the United States, Europe, or developing countries. May be repeated with consent of instructor.

30:348 Constitutional Law and Political Behavior 1 a.h.

Major issues of supranational law; analysis of processes and procedures.

30:452 Problems in International Politics 4 a.h.

In-depth examination of selected issues of international politics, emphasizing problems of international relations, may be repeated with consent of instructor.

30:549 Human Rights and World Community 4 a.h.


Independent individual study; consent of supervising faculty member required. May be repeated with consent of instructor.

30:342 Master's Thesis 1 a.

Consent of supervising faculty member required.

30:343 Doctoral Dissertation 1 a.

Consent of supervising faculty member required.

30:454 PhD. Dissertation 1 a.

Consent of supervising faculty member required.

Portuguese

See "Spanish and Portuguese."

Psychology

Department chairman: Dan W. Norcross


Degree offered: B.A., B.S., M.A., Ph.D.

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.S. program includes fewer specific requirements and thus affords the student an opportunity to develop in emphasis in psychology within a broad undergraduate program.

Students in either program begin with a general introductory course, followed by cve 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.
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 31:1 Elementary Psychology, or 31:3 General Psychology, or equivalent; 31:43 Evaluating Psychological Research, or equivalent; and one area elective course from each of four of the five area groupings given below, or equivalents.

Alternatively, the 31:43 requirement may be satisfied by a combination of 31:43 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 the following courses, or equivalents: 31:1 Elementary Psychology or 31:3 General Psychology; 31:43 Introduction to Statistical Methods; 31:120 Experimental Psychology I; 31:121 Experimental Psychology II; and one elective course from each of four of the five area groupings given below, with at least three of these four area electives being 100-level courses.

Candidates for the B.S. degree in psychology must satisfy the College of Liberal Arts eight semester hour natural science core requirement with 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 Psychology)
31:13 Psychology of Adjustment
31:105 Personality
31:161 Current Theories of Schizophrenia
31:163 Abnormal Psychology
31:166 Abnormal Child Psychology
31:170 Behavior Modification

Area B (Social Psychology)
31:15 Learning to Social Psychology
31:03 Development of Social Behavior
31:104 Experimental Social Psychology
31:106 Attitude Change
31:108 Small Group Processes

Area C (General Experimental Psychology)
31:50 Introduction to Cognitive Psychology
31:102 Psychology as a Science
31:110 Learning and Motivation in Children

Psychology
31:19 Human Memory, Learning and Conceptualization
31:124 Introduction to Mathematical Models in Psychology
31:132 Motivation
31:153 Perception

Area D (Biopsychology and Physiological Psychology)
31:50 Comparative Psychology and Ethology
31:123 Psychology of Learning
31:125 Brain Function and Learning
31:126 Physiological Psychology and Psychobiology
31:128 Introduction to Behavioral Pharmacology
31:129 Biological Aspects of Behavior
31:135 Operant Behavior Analysis

Area E (Developmental Psychology)
31:14 Introduction to Child Psychology
31:107 Language Development
31:114 Cognitive Development of Children
31:116 Singer of Development
31:148 Individual Differences in Developmental Psychology

The 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 a 3.0 overall. The program includes research seminars and individual research collaboration with faculty members. Interested majors should contact the Department 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 operated 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 planning individual research projects, which the students then carry out in department laboratories during the summer months. Continuation of this program is contingent on the availability of federal support.

Graduate Program

The graduate program in psychology is designed to provide comprehensive training leading to the Ph.D. degree with emphasis in one of the following broad training areas: general experimental psychology, biopsychology, 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 work appropriate jobs for graduates of this program are in academic institutions, 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.

Program Requirements

The graduate program in psychology is designed as a four-year program leading to the Ph.D. degree; 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 at least an additional two years in the department depending on the nature and extent of previous research activity.

The M.A. with Thesis

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 requirements appropriate to the training area with a cumulative grade-point average of at least 3.7. 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 M.A. without Thesis

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 two years of satisfactory completion of 38 semester hours of coursework including courses required by the training area and successful performance on a written and/or oral examination covering the student's area of specialization.

During the first three semesters each beginning graduate student follows a curriculum involving both required and elective courses designed to develop understanding of the core, theoretical, research methods and investigative techniques appropriate to the special training area. All students also engage in supervised research practicum during each of these semesters. By the end of the third semester each beginning student is expected to have demonstrated competence in coursework, in research practicum, and in participation in the teaching, research and service functions of the Department. In addition each student intending to proceed toward the Ph.D. is expected to have made substantial progress in planning for the master's research project. A faculty-wide review of each student's progress is conducted at this point in the student's program.

The Ph.D.

Formal advancement of a student to Ph.D. candidacy follows a review conducted at the middle of the third year, i.e., after the fifth semester. By this time the student must have successfully completed and defended the master's thesis and passed a comprehensive Examination, set by the training area, covering a range of material described in the training area's area of concentration.

The Ph.D. degree in this department requires completion of at least 72 semester hours with a cumulative grade-point average of at least 3.0. Each student also is expected to take sufficient work outside the specialty area to develop a reasonably broad background in the discipline of psychology as a whole, and familiarity with the history and philosophy of psychology. The extent of this more general training, and its time placement within the graduate program, varies somewhat among the training areas and depends also on the individual student's background and interests. Work toward the Ph.D. concludes with preparation and satisfactory oral defense of the dissertation.

More specific information about training area programs, degree requirements, policies and procedures for evaluation of student progress and performance, and other matters of concern to graduate students is set forth in the Department's Graduate Student Handbook, which is provided to each student at the time of initial registration.

Major Specialty Areas for Graduate Training

The general experimental program focuses primarily on the study of human behavior. Three major sub-areas are represented: cognitive processes, sensation and perception, and experimental child psychology.

Students specializing in cognitive processes acquire expertise in areas such as information processing and decision-making, learning and memory, and concept formation and language behavior.

Students specializing in sensation and perception may focus on visual perception, auditory processes or mathematical models in perception and psychophysics.

Students in experimental child psychology specialize in areas such as discrimination learning, problem solving and transfer of training. All students in the general experimental program develop sophistication about laboratory techniques, computer-controlled data acquisition and reduction systems, and electronic instrumentation. In addition, they acquire a solid background in statistical techniques and in the historical and contemporary theoretical frameworks of psychology.

Students are expected to broaden their training by taking courses in other specialty areas within the Department and often also elect courses in other departments of the University.

The central focus of the biopsychology program is on the analysis of learning and motivation, primarily in non-human subjects, through the application of behavioral, biological and mathematical principles. Current approaches include the techniques of classical and operant conditioning, physiology, neuropharmacology, neurochemistry, neuroendocrinology, neuroanatomy and comparative psychology. Students in this program have abundant opportunities to develop relevant skills including computer-assisted experimentation, electronic instrumentation, neurosurgical and histological techniques and biochemical assay procedures. Fundamental facts and theories about the biological basis of behavior will be stressed in coursework to be taken within the Department of Psychology as well as in cross-departmental life science courses.

Students in the physiological program specialize in some aspect of central nervous system physiology and its relation to behavior. Areas of emphasis include electrophysiological aspects of brain function, physiological basis of learning, biological rhythms and human psychopathology. In addition to broad training in
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 commitment of the faculty to research and scholarship is manifest in the publication of some 75 articles, books, reviews and book chapters each year, and in the fact that many of the faculty members are, or have been, active as editors, associate editors and regular consulting editors for major psychological journals.

Courses
For Undergraduates
Either 311 or 312 is prerequisite to all other courses in psychology except 313 and 314.

Subject to this general prerequisite and to specific prerequisites for particular courses, all psychology courses are open to freshmen.

Either 311 or 312, but not both, may be taken toward the College of Liberal Arts social science core requirement, and only one may be applied toward the major in psychology.

311 Elementary Psychology
3 a.h.
Summary of psychology as a behavioral science; topics include sensation and perception, basic learning processes, child development, memory and cognition, psychological bases of behavior, individual differences, psychopathology, abnormal behavior and social influences. In addition to scheduled class meetings, students are required to become familiar with material in the laboratory through eight hours of participation in research studies or review of research literature.

312 General Psychology
4 a.h.
Some topics and requirements as 311, but with additional discussion sessions and greater emphasis on research in which experimental method is applied to analysis of behavior. Students recommended to students taking 311 for psychology; open also to all freshmen students, and to other qualified students with permission of instructor.

312J Psychology of Adjustment
3 a.h.
The basic principles of psychology as applied to contemporary problems of personal adjustment.

314 Introduction to Child Psychology
3 a.h.
Survey of recent research and theory on biologic, cognitive and social aspects of development from infancy through adolescence.

315 Introduction to Social Psychology
3 a.h.
Research relating behavior of individual human organisms to behavior in social environment; socialization and socialization, attitude development and change, social influences on perceptual and conceptual processes, social interaction; contribution by sociologists and anthropologists.

316 Introduction to Group Dynamics
3 a.h.
Refers to social-emotional factors that determine group formations, functioning and maintenance; although emphasis is on psychological research literature, material in related fields is covered.

317 Educational Psychology and Measurement
3 a.h.
Same as Education 275.

318 Psychology in Business and Industry
3 a.h.
Approach of psychology to problems of the work in world; emphasis on personnel selection, training, motivation, coaching and job performance.

318A Evaluating Psychological Research
3 a.h.
Concepts and procedure basic to solution and utilization of related behavioral variables considered in context of experimental and applied studies. Students who have had 312A or equivalent are ineligible for this 3 a.h.

318B Comparative Psychology and Ethology
3 a.h.
Survey of experimental and descriptive work in the study of animal behavior and the relationship of studies of animals to men, covering both the causes and functions of behavior; topics include: instinct, learning, social behavior, communication, motivation and evolution.

318C Introduction to Cognitive Psychology
3 a.h.
Survey of basic principles of human learning, memory and higher mental processes including decision-making, problem solving, creativity and language.

3181 Research Practicum in Psychology
1 a.h.
Small group participation in faculty research projects; includes literature review, planning of studies, data collection, analysis, interpretation and write-up. Prerequisite: completion and consent of instructor. May be repeated.

318J Special Reading Project
3 a.h.
For undergraduate majors in psychology. Prerequisites: sponsorship of staff member and approval of chairman of department.

318K Honors Seminar in Psychology
3 a.h.
Supervised literature review, preparation of an oral presentation and written paper on advanced topic in psychology. Admission by invitation of Department Honors Committee.

318L Honors Thesis Research
3 a.h.
Supervised individual research project, leading to written thesis and oral defense. Open only to honors students.

For Undergraduates and Graduates
318L Social Psychology
3 a.h.
Current research activities in social psychology; primary emphasis on laboratory study of social behavior; critical evaluation of contemporary theories and methodologies.

318M Psychology as a Science
3 a.h.
Analysis of the nature of the concept, laws and theories of modern psychology, with discussions of the logic of measurement and probability; exercises in applying psychological research. Prerequisites: junior or senior standing or permission of instructor.

318N Development of Social Behavior
3 a.h.
Basic processes affecting children's responses to the social environment; attachment and dependency, social influence, imitation and moral development.

318P Experimental Social Psychology
3 a.h.
Experimental approaches to attitudes modification, social perception, judgment and related social processes; theory and critical evaluation of methodology in representative types of problems.

318Q Personality
3 a.h.
Determinants, correlates, consequences of adaptive functions and personality development.

318R Attitude Change
3 a.h.
Current theoretical approaches to attitude change; laboratory and field methods of research; consideration of basic processes of change within broader framework of psychology.

318S Language Development
3 a.h.
Recent research and theories dealing with the acquisition of language (speech, auditory discrimination), discussed within the framework of cognitive development. Same as Speech Pathology and Audiology 211, 212, Linguistics 105, 106.

318T Social Group Processes
3 a.h.
Clasic work on group pressures: laboratory experiments, field studies and interpersonal relations. Topics may include cooperation, conformity, obedience, compliance, group performance, responsibility, diffusion, decisions making, conflict. 318T recommended but not required.

318U Psychology of Aggression
3 a.h.
An introduction to basic theoretical and research on aggressive behavior in human and nonhuman subjects.

311L Learning and Motivation in Children
3 a.h.
Survey of research and theory on child's conditioning, discrimination learning, and impact of number, timing and motivational systems.

311M Child Development
3 a.h.
Same as Education 775.2/5.2. Open to sophomores.

311N Socialization of the Child
3 a.h.
Influence of family interaction and societal events on the development of social behavior and the self.

3110 Introduction to Physiological Psychology
3 a.h.
Same as Speech Pathology and Audiology 311 and Linguistics 105, 106.

3114 Cognitive Development of Children
3 a.h.
Developmental research and theory concerning conceptual, perceptual and verbal processes of children.

3115 Behavioral Psychology
3 a.h.
Same as Education 315.

3116 Stages of Development
3 a.h.
Research and theory on selected stages of development.

3117 Exceptional Children
Same as Social Work 101.

3118 Developmental Psychobiology
3 a.h.
Review of theory and research concerning biological and experiential influences on the development of behavior in humans and non-human organisms.
31.119 Human Memory, Learning and Conceptual Processes
3.0 a.h.
An introduction to contemporary psychological theory and research.

31.120 Experimental Psychology I
3.0 a.h.
Legislation and application of experimental methods to analysis of behavioral phenomena; includes orientation of some major problems areas of experimental psychology. Prerequisite: 31.119.

31.121 Experimental Psychology II
2.0 a.h.
Theoretical and experimental bases of learning and human behavior. Prerequisite: 31.120 or consent of instructor.

31.124 Introduction to Mathematical Models in Psychology
3.0 a.h.
Introduction to mathematical models in the interpretation of behavioral data; application to learning, decision-making, information processing and social processes. Prerequisite: Some course in statistics or experimental design.

31.125 Brain Function and Learning
3.0 a.h.
Survey of physiological psychology, with emphasis on sensory and motor systems and integrative processes of nervous system.

31.126 Physiological Psychology and Psychopharmacology
3.0 a.h.
Biological bases of behavior, including the functional and neural bases of learning and conditioning.

31.127 Drugs and Behavior
3.0 a.h.
An introduction to the effects of drugs on human behavior and psychological functioning. Prerequisite: 31.119.

31.128 Biological Aspects of Behavior
3.0 a.h.
An introduction to biological bases of behavior; consideration of alternative perspectives in psychological biology.

31.129 Psychology of Thinking
3.0 a.h.
Problems of human memory, judgment and decision making, language and thought. Recommended: 31.119.

31.130 Perception
3.0 a.h.
Recent developments in experimental approaches to perception.

31.131 Operant Behavior Analysis
3.0 a.h.
An introduction to operant conditioning and to experimental analysis of behavior in laboratory and applied settings. Prerequisites: 31.120 or 31.127.

31.132 Abnormal Psychology
3.0 a.h.
Theories and treatments of psychological disorders.

31.133 Human Engineering
3.0 a.h.
Design of work systems for maximum efficiency and effectiveness. Prerequisites: 31.119 and an introductory course in statistics.

31.134 Psychology in Management
3.0 a.h.
Theories of cognitive processes in human decision making and supervisory behavior. Prerequisites: 31.119 and Management Engineering 386.130.

31.135 Current Theories of Schizophrenia
3.0 a.h.
Recent developments in schizophrenia; their relationship to other phenomena. Prerequisite: 31.119.

31.136 Abnormal Psychology
3.0 a.h.
Biological bases of behavior, including the functional and neural bases of learning and conditioning.

31.137 Psychopathology of Child Behavior
3.0 a.h.
An introduction to the study of child psychology with special emphasis on the applications of basic concepts to theories of learning. Prerequisites: 31.119 and consent of instructor.

For Graduates
31.166 Statistical Analysis
3.0 a.h.
Survey of major types of statistical analysis used in psychology and the social sciences.

31.167 Behavior Modification
3.0 a.h.
An introduction to the principles and methods of behavior modification. Prerequisites: 31.119 or consent of instructor.

31.280 Advanced Behavioral Psychology
3.0 a.h.
An introduction to the principles and methods of behavior modification. Prerequisites: 31.119 or consent of instructor.

31.293 Topics in Psychology
3.0 a.h.
Topics in the following areas may be offered in any given term: psychological assessment; critical issues in the field of psychology; research methods and the scientific method; normal development; and medical and clinical psychology.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>31:212</td>
<td>Behavioral Development</td>
<td>2</td>
<td>Course on bivariate and multivariate analysis and interpretation of data.</td>
</tr>
<tr>
<td>31:246</td>
<td>Psychological Methodology</td>
<td>2</td>
<td>Course on the methodological aspects of psychology.</td>
</tr>
<tr>
<td>31:256</td>
<td>Research Methodology</td>
<td>2</td>
<td>Course on the research methodology in psychology.</td>
</tr>
<tr>
<td>31:268</td>
<td>Psychotherapy</td>
<td>2</td>
<td>Course on the principles and techniques of psychotherapy.</td>
</tr>
<tr>
<td>31:270</td>
<td>Clinical Psychology</td>
<td>2</td>
<td>Course on the principles and techniques of clinical psychology.</td>
</tr>
<tr>
<td>31:280</td>
<td>College Teaching of Psychology</td>
<td>2</td>
<td>Course on the principles and techniques of teaching psychology.</td>
</tr>
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</table>

**Recreation Education**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>31:213</td>
<td>Development of Recreational Programs</td>
<td>2</td>
<td>Course on the development and implementation of recreational programs.</td>
</tr>
<tr>
<td>31:224</td>
<td>Recreation Management</td>
<td>2</td>
<td>Course on the management and administration of recreational programs.</td>
</tr>
<tr>
<td>31:230</td>
<td>Recreation Law</td>
<td>2</td>
<td>Course on the legal aspects of recreational programs.</td>
</tr>
<tr>
<td>31:240</td>
<td>Recreation Finance</td>
<td>2</td>
<td>Course on the financial aspects of recreational programs.</td>
</tr>
<tr>
<td>31:250</td>
<td>Recreation Marketing</td>
<td>2</td>
<td>Course on the marketing aspects of recreational programs.</td>
</tr>
</tbody>
</table>

**Related Courses in Other Departments**

**Anatomy**
- 32:10 Anatomy and Physiology
- 32:120 Histology

**Biology**
- 32:100 General Biology
- 32:120 Advanced Biology

**Chemistry**
- 32:100 Introduction to Chemistry
- 32:120 General Chemistry

**Epidemiology**
- 32:100 Epidemiology
- 32:120 Biostatistics

**Geology**
- 32:100 Geology
- 32:120 Geophysics

**Mathematics**
- 32:100 Introduction to Mathematics
- 32:120 Advanced Mathematics

**Physics**
- 32:100 General Physics
- 32:120 Advanced Physics

**Psychology**
- 32:100 Introduction to Psychology
- 32:120 Advanced Psychology

**Sociology**
- 32:100 Introduction to Sociology
- 32:120 Advanced Sociology

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.

**Degree Offered:**

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 recreation 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, maintenance and management 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 (36 s.h.)

104:60 Foundations of Recreation
104:61 Recreation Leadership
104:110-111 Internship in Recreation
104:120 Introduction to Therapeutic Recreation
104:129 Administration of Recreation I
104:134 Recreational Program
104:135 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-III
First aid proficiency
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 recreation programs in treatment and recreational 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 interpretive programs with schools, youth agencies and conservation districts.

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 climaxd 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 departments, agencies and services 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 a 3.0 grade point average on all college work attempted and on all work completed 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—104:190 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.

Master of Arts Degree Programs
The degree is offered with or without thesis. In both programs, the options are recreation administration, therapeutic or therapeutic recreation. Each requires this undergraduate background:

- Foundations of Recreation 3 s.h.
- Recreational Leadership 3 s.h.
- Recreation Program 3 s.h.
- Park and Recreation Facility Management 3 s.h.
- Introduction to Therapeutic Recreation 3 s.h.
- Administration of Recreation 3 s.h.
- Principles of Outdoor Recreation 3 s.h.

Total 21 s.h.
Depending on his or her background in the field, the student may be required to take up to 12 hours of graduate coursework beyond the total option program minimum. Remaining prerequisite deficiencies may then be satisfied through option program electives. Credit may be given for experience when competence is demonstrated by examination.

**Master of Arts with Thesis**

The non-thesis program is designed as a terminal unit in preparation for recreation administration. It requires a minimum of 30 semester hours of graduate-level study in recreation and related areas.

**Master of Arts without Thesis**

The non-thesis program is designed as a terminal unit in preparation for recreation administration. It requires a minimum of 38 semester hours of graduate-level study in recreation and related areas.

**Departmental Financial Aid**

Assistance is available in the form of Graduate Assistantships, Research Assistantships, Teaching Assistantships and Post-Graduate Assistantships for Doctoral Candidates. This assistance is made available through the department as well as through a special program in Therapeutic Recreation Service for Handicapped Children.

**Courses**

### Primarily for Undergraduates

104/105 Foundations of Recreation 1.5 a.h.
- Basic philosophical, historical, scientific foundations and developments in leisure and recreation; functions and settings of organized recreation and survey of organizations and agencies concerned with recreation.

104/101 Recreation Leadership 2 a.h.
- Leadership principles and techniques, program activities.

104/102 Recreational Leadership 2 a.h.
- Recreational Leadership 2.

104/103 Recreational Crafts 2 a.h.
- 104/104 Recreational Crafts 2.

104/105 Camp Leadership 2 a.h.
- Camp Leadership.

104/106 Orientation to Rehabilitation Settings 3 a.h.
- Rehabilitation settings, conferences and written reports related to specific areas of interest.

104/110 Recreational Counseling in Libraries 2 a.h.
- Counseling settings, conferences and written reports related to specific areas of interest.

104/111 Internship in Recreation 2 a.h.
- Practical field experience arranged to include directors, program planning and administrative procedures. Prerequisites: 104/102 and permission of instructor.

104/112 Internship in Recreation 2 a.h.
- Continuing of 104/111.

104/113 Internship in Recreation 2 a.h.
- Current issues; research of all outdoor and indoor training programs in recreation.

104/120 Introduction to Therapeutic Recreation 3 a.h.
- Basic concepts of recreation's role in rehabilitation; organization and development of programs, agencies in understanding behavior of patients and adaptation of activities to basic disability areas.

104/121 Role of Therapeutic Recreation in Rehabilitation 3 a.h.
- Role of therapeutic recreation in total institutional and community rehabilitative effort, specific attention given to cooperative role of therapeutic recreation in relation to total institutional program.

104/122 Service to the Blind-Mind 3 a.h.
- Programming, personnel, finance and leadership, liability, areas and facilities, other administrative aspects of recreation. Prerequisites: 104/114.

104/123 Administration of Recreation II 2 a.h.
- Continuation of 104/120; for students specializing in park and recreation administration.

104/131 Rural and Community Recreation 3 a.h.
- Role of recreation in attaining the social and cultural total community involvement in activities through school, church, voluntary agency, commercial, private, industrial, institutional, military and technical programs.

104/132 Community Recreation 2 a.h.
- Planning and evaluation of recreation programs; organization, personnel, utilization of resources, use of facilities and leadership.

104/133 Parks and Recreation Facility Management 3 a.h.
- Programming, personnel, finance and budget, areas and facilities, ACA standards, administrative structure, legal aspects, evaluation and other administrative aspects of organized outdoor recreation.

104/134 Principles of Outdoor Recreation 3 a.h.
- Administration of state natural resources and public land on national, state, local and private levels; responsibilities of recreation personnel to various phases of natural resource recreation and multiple use of public wild lands.

104/135 Camp Administration 3 a.h.
- Planning, personnel, finance and budget, areas and facilities, ACA standards, administrative structure, legal aspects, evaluation and other administrative aspects of organized outdoor recreation.

104/136 Development and Scope of Outdoor Education 3 a.h.
- Development and scope of outdoor education, educational significance, philosophy, organization, administration, methodology and content; planning and selection of outdoor education programs.

104/137 Recreation Program Evaluation 3 a.h.
- Administration of natural resources and public land on national, state, local and private levels; responsibilities of recreation personnel to various phases of natural resource recreation and multiple use of public wild lands.

104/138 The Role of the College Union 2 a.h.
- The role of the college union.

104/139 Workshop gunmen Program 1 a.h.
- Workshop gunmen Program.

104/139 Investigation of problems related to specific areas of interest.

104/140 Introduction to Human Values 2 a.h.
- Open to majors and non-majors. May be repeated.

104/140 Research in Leisure Education Research 2 a.h.
- Design, execution and analysis of research projects.

### Primarily for Graduates

134/301 Problems 2 a.h.
- Council study, follow-up before reporting.

134/310 Graduate Pedagogy 2 a.h.
- Concepts of Recreation and Leisure 2 a.h.
- Design and conduct of educational and leisure education programs; development of educational and leisure education programs.

134/326 Professional Recreation Services 3 a.h.
- Professional recreation services to society, particularly the handicapped; professional development and facilities, in general; professional and general education which contribute to effective teaching of recreational functioning. Prerequisites: graduate status and consent of instructor.

134/335 Recreation and Leisure Education Services 3 a.h.
- Creative, international, educational development of therapeutic recreation services in leadership, particularly the handicapped, programming, professional education, practical education of related facilities. Prerequisites: graduate status and consent of instructor.

134/336 Beyond the Classroom 2 a.h.
- Problems of recreation professionals in the community.

134/361 Therapeutic Recreation and Recreation Programs 2 a.h.
- Issues of therapeutic recreation and recreation programs.

134/362 Therapeutic Recreation and Recreation Programs 2 a.h.
- Issues of therapeutic recreation and recreation programs.
Religion

104:252 Seminar: Therapeutic Recreation 3 s.h.
Senior and special project approach to therapeutic recreation is specific setting such as psychiatric, physically handicapped, mentally retarded, convalescent, etc., with laboratory techniques and procedures unique to activity therapy programs.

104:253 Seminar: Camping 3 s.h.

104:254 Planning and Design of Recreation and Parks Areas and Facilities 3 s.h.
Principles: methodology, standards of design, planning, construction, etc., measure of area not feasible for recreation and physical education.

104:256 Seminar: College Union Management 3 s.h.

104:258 Workshop College Union Program 2 s.h.

104:501 Research in Recreation 3 s.h.
Research project development, selection, method and design.

104:510 Recreation College Teaching Internship 3 s.h.

104:511 Seminar: Thesis I 3 s.h.

104:542 Seminar: Thesis II 3 s.h.


104:545 Advanced Professional Practicum Recreation Parks: Leisure arr.

Religion

Director of school: James C. Spalding

Faculty: professors Robert D. Bird, David R. Belger, George W. Ferrill, J. Kenneth Eaker, James F. McCrae, David W. Pate, Robert F. Schulke, James C. Spalding, professor emeriti Frederick Preugnitz, Sidney R. Mauch; associate professors Jay R. Hokeins, George E. Hileman, Jr., George W. Pate; assistant professors John P. Downey, T. Deaver Beamet, Helen T. Goldstein, Stephen J. Parker

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

A central goal of the School of Religion has always been to help as many students as possible—whether or not they are majoring in religion—to gain an understanding of the history and literature of the religion of mankind, and insight into the nature and meaning of religion as it affects life in human culture. Such understanding is not only valuable for its own sake; it is essential for responsible participation in a religious pluralistic American society and in a pluralistic world community. Many students at the University majoring in other areas elect courses in religion as a part of their general education program; some elect religion as a major field. An undergraduate major in religion provides a foundation for graduate and professional study in the field of religion, but 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 those schools leading toward professional careers in churches and synagogues. Other majors continue their academic study of religion toward the M.A. and Ph.D. degrees to become specialists in the study and teaching of religion as a basic dimension of human culture.

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 majors’ seminar (32:166 Senior Seminar). Students majoring in religion also elect 12 hours in related courses such as 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 seeking 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:

- Jewish and Christian Scriptures
- Old Testament
- New Testament
- Post-Biblical Judaism
- History of Christianity
- Modern (since 1500)
- Modern (since 1500)
- Theology and Ethics
- Jewish
- Roman Catholic
- Protestant
- World Religions
- History of Religions
- Intensive Study of Religion in India, China, or Japan
- Religion and Personality
- Religion and Personality Development
- Religion and Health

Master of Arts

A score of 1000 on the GRE Aptitude Test and a GPA of 3.0 are ordinarily required for admission to the Master of Arts program. The Master of Arts degree in religion requires four courses or seminars at the 100-level or above, in each of three areas, for not less than ten semester hours of credit in each area nor less than 30 altogether. Toward the end of the fourth semester, the student writes a master’s examination on the courses and/or seminars he or she has taken.

The student must demonstrate a reading knowledge of French or German, or another foreign language which is related to his or her field of study and is approved by his or her adviser.

A thesis is highly 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 30-hour requirement.

Master of Arts in Religion and Health

The contemporary study of the function and dynamics of religion in illness and health necessitates a combination of theoretical and clinical investigations 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 ethics 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
ampus by an accredited member of the Association for Clinical
Pastoral Education.

Doctor of Philosophy
A score of 1100 on the GRE Aptitude Test and a GPA of 3.2 are
ordinarily required for admission to the Ph.D. program.

The student may elect one of two options for doctoral study. In
the first option, a consultation with the School of Religion fac-
ulty, the student develops a broad program which will give him
or her a knowledge of three of the five areas in which the school
offices graduate study.

Major written qualifying examinations, covering coursework
and readings in each of the three selected areas, provide an in-
itial 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 equiva-
 lent 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 or 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 less than twelve months after passing all three qualifying
examinations, the student and advisor must establish a three-
member committee for comprehensive examinations. The com-
mitee will determine three subjects for the comprehensive exam-
inations, including one subject closely related to the student's dissertation topic.

The plan of study for the comprehensive examinations must in-
clude ten semester hours of coursework at the 100-level or above
outside the School of Religion with grades of "A" or "B", five
semester hours of coursework in a field of religion outside the
student's field of major interest, with grades of "A" or "B"; and a
maximum of three papers indicating 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.

No less than five semester hours of credit must 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 bring the average up to 3.0 within one semester
ordinarily will be disqualified from further graduate study in the
School of Religion.

A student choosing the second option pursues one of four
separate programs:

1. Biblical and Christian History in the Ancient Near East
2. History of Theology and Religious Thought in the West
3. Contemporary Theology and Religious Thought
4. Studies Relating Theology and Other Academic Disciplines

The student may apply for admission to this program before or
daughter for graduate study.

The student is expected to have passed the language require-
ments 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 or her program area a copy of the
paper he or she has written that quarter that semester.

Dependent on the student's program, the comprehensive exam-
inations 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 examina-
tions, the student must submit a dissertation prospectus to his or
her advisor. The advisor will then assemble a dissertation com-
mitee 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 ob-
tained from the director of the school.

Special Facilities

The University Hospitals and Clinics provide clinical opportuni-
ties for students in religion and personality, particularly in clinical
counseling, medical education, and the M.A. program in religion and
health. Individual courses on such topics as death and dying and medical
ethics also utilize hospital personnel and facilities.

Graduate Financial Aids

The School of Religion has available three types of departmental
financial aid: teaching research fellowships (TRF); teaching assistan-
tships (TA); and research assistantships (RA).

The TRF is awarded on the basis of proven academic excellence
to an enrolled student who has not previously attended The
University of Iowa. It provides support, including stipends, for
four years for a student holding a B.A., and for three years
for a student holding an M.A. or M.Div.

TAs, either 1/4- or 1/2-time, are awarded to students on the
basis of superior academic performance; in addition, first-year
students are not eligible. They are limited to two academic
years, and are evaluated and renewed annually. Students holding TAs
work primarily in the undergraduate course centers.

Students holding RAs are assigned to a particular professor to
assist him or her with research projects. RAs are also awarded on
a yearly basis, to enrolling and to current students, 1/4-
or 1/2-time, and reviewed annually.

Courses

Primarily for Undergraduates

281 History of the Bible
282 Old Testament Survey
381 New Testament Survey
481 Old Testament Survey
482 New Testament Survey
581 New Testament Survey in Historical Setting
582 Seminar in Old Testament
583 Seminar in New Testament
584 Seminar in Modern Theology
585 Seminar in Historical Theology
586 Seminar in Systematic Theology
587 Seminar in Philosophy of Religion
588 Seminar in Ethics
589 Seminar in Social Ethics
591 Seminar in Christian Ethics
592 Seminar in Jewish Ethics
593 Seminar in Islamic Ethics
594 Seminar in Eastern Religions
595 Seminar in Comparative Religion
596 Seminar in Theological Method
597 Seminar in Theological Thought
598 Seminar in Theological History
599 Seminar in Theological Practice
681 Seminar in Religious Education
682 Seminar in Religious Leadership
683 Seminar in Religious Administration
684 Seminar in Religious Sociology
685 Seminar in Religious Psychology
686 Seminar in Religious Anthropology
687 Seminar in Religious Sociology
688 Seminar in Religious Ethics
689 Seminar in Religious Ethics
690 Seminar in Religious Law
691 Seminar in Religious Art
692 Seminar in Religious Music
693 Seminar in Religious Dance
694 Seminar in Religious Drama
695 Seminar in Religious Film
696 Seminar in Religious Theater
697 Seminar in Religious Literature
698 Seminar in Religious Poetry
699 Seminar in Religious Prose
781 Seminar in Christian Ethics
782 Seminar in Jewish Ethics
783 Seminar in Islamic Ethics
784 Seminar in Eastern Religions
785 Seminar in Comparative Religion
786 Seminar in Theological Method
787 Seminar in Theological Thought
788 Seminar in Theological History
789 Seminar in Theological Practice
790 Seminar in Religious Education
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793 Seminar in Religious Sociology
794 Seminar in Religious Psychology
795 Seminar in Religious Anthropology
796 Seminar in Religious Sociology
797 Seminar in Religious Ethics
798 Seminar in Religious Ethics
799 Seminar in Religious Law
881 Seminar in Religious Art
882 Seminar in Religious Music
883 Seminar in Religious Dance
884 Seminar in Religious Drama
885 Seminar in Religious Film
886 Seminar in Religious Theater
887 Seminar in Religious Literature
888 Seminar in Religious Poetry
889 Seminar in Religious Prose
981 Seminar in Christian Ethics
982 Seminar in Jewish Ethics
983 Seminar in Islamic Ethics
984 Seminar in Eastern Religions
985 Seminar in Comparative Religion
986 Seminar in Theological Method
987 Seminar in Theological Thought
988 Seminar in Theological History
989 Seminar in Theological Practice
990 Seminar in Religious Education
991 Seminar in Religious Leadership
992 Seminar in Religious Administration
993 Seminar in Religious Sociology
994 Seminar in Religious Psychology
995 Seminar in Religious Anthropology
996 Seminar in Religious Sociology
997 Seminar in Religious Ethics
998 Seminar in Religious Ethics
999 Seminar in Religious Law
32:254 Seminar: Contemporary Theology
32:255 Seminar: Introduction to Systematic
32:257 Seminar: History of Protestant Thought
32:259 Seminar: Reformation Theology
32:261 Seminar: Historical Theology
32:258 Seminar: Religion and Black Culture
32:259 Seminar: Recent Catholic Theology
32:260 Seminar: Christian Origen
32:261 Seminar: Christian Origen II
32:262 Seminar: Christian Origen III
32:263 Seminar: The Process of Aging
32:264 Seminar: Clinical Pastoral Education
32:265 Seminar: Problems and Methods in Studying and Teaching About Religion
32:266 Seminar: American Religious Thought
32:270 Seminar: American Human Rights and World Community

Rhetoric Program
Constitution: 32:105:18
Faculty: president, Donald C. Cola; associate presidents, William O. Clark, Lois B. Kelly, Margaret S. McDowell, Lois B. Munk, assistant president, Richard S. Stepp; dean, Richard S. Stepp; associate deans, Douglas M. Reed.

The Rhetoric Program offers students direct opportunities, through their own oral and written communication, to evaluate their experiences and to explore and formulate possibilities for their personal and intellectual growth. Responsible using various sources of information and investigating, analyzing, writing and responding to the ideas, beliefs and attitudes of other writers and speakers are integral functions of the course. Its major focus is on the student's own communication. The primary responsibility of instructors is to help students clarify their thinking and improve their communication.

Satisfactory proficiency in rhetoric skills is a requirement for bachelor's graduation from the College of Liberal Arts. (See "Basic Requirements" in the introduction to the "College of Liberal Arts" section of the Catalog.)

Courses

For Undergraduates

101:203 Rhetoric 4 a.s.
"Sentences and practice in speaking, reading and writing with the focus on exposition and critical reading. Development in the analysis, organizing and developing ideas; learning to use library resources for supporting and supporting ideas; adapting discourse in various situations."

104:202 Rhetoric 4 a.s.
Continued instruction and experience in oral and written communication with the focus on critical thinking, research and argumentation; development in research methodology; learning and evaluating information and diverse points of view; analysis and responsible use of evidence; measured interpretation of substantive matters; application in problem solving and research. "

Instruction and practice in speaking, writing and critical reading with the focus on exposition, critical thinking, research and argumentation; development in research methodology; learning and evaluating information, diverse points of view; analysis and responsible use of evidence; measured interpretation of substantive matters; application in problem solving and research. "

Cross-listed as English 201:1 for students in the College of Engineering.

110:201 Rhetoric 4 a.s.
Instruction and practice in written communication only. See 10:3 for focus and conversations.

110:202 Rhetoric 4 a.s.
Continued instruction and course-level writing in improving their reading proficiency throughout the course. Though regular assignments focusing on Reading Lab material, feedback from their current English courses and library research, students are encouraged to develop efficient study skills, vocabulary, grammar, reading comprehension, note-taking ability, expression of ideas. "

110:203 Rhetoric 4 a.s.
"Enables the student in written communication with a teacher, who responds first to the writer's ideas, then focuses on particular points in which he or she is engaged in particular writing situations or assignments. Open to any student not enrolled in another rhetoric course."

Reserve Officers Training Corps (ROTC)

Air Force Department: 32:103:10
Army Department: 32:103:11

Undergraduate Programs

The purpose of Reserve Officers Training Corps programs is to develop army and air force officers. Graduates receive additional commissions. Participation is voluntary. The programs are administered by the Department of Military Science (army ROTC) and Aerospace Military Studies (air force ROTC), which are academic departments of the University, offering courses applicable to any degree awarded by the College of Liberal Arts.

The Basic Course in ROTC, taken over the freshmen and
Reserve Officers Training Corps (ROTC)

sophomore years, provides instruction in the fundamentals of leadership and management, with emphasis on leadership develop-
ment. Enrollment in the Basic Course involves no service obligation.

Students demonstrating officer potential are selected for the Advanced Course, taken over the junior and senior years and including advanced leadership and management training, instruc-
tion in the theory and dynamics of the military team, and the development of students’ abilities to think creatively and to write and speak effectively.

Before the junior year, air force cadets attend four field training sessions offered at bases across the country. Army cadets attend a six-weeks advanced camp at Fort Lewis, Washington, between the junior and senior years. Entry into the Advanced Course is competitive, and entails a commitment to serve three years as an army officer or four years as an air force officer. Commissioned officers who volunteer for flight training or other service schools may receive an additional service obligation. All ROTC scholar-
ships cadets accept a four-year commitment.

Students who have not taken the Basic Course may qualify for the Advanced Course by attending a six-week basic summer camp. Priority for summer camp assignments is given to the army by the air force to students majoring in its scientific and technologically-oriented subjects.

Certain service veterans may be eligible for immediate entry into the Advanced Course. Students who have had military instruction elsewhere may receive partial credit for comparable ROTC coursework at Iowa. All students with prior military experience should contact the appropriate department to gain ROTC credit toward a commission.

Although the full ROTC programs normally span four years, they can be completed in two, three, or three and a half years, with departmental approval.

Courses

Aerospace Military Studies

2A:18 Aerospace Military 100 (3 h)

Introduction to defense and security affairs; areas of instruction include organization, mission and growth of the air force, major uses of offensive and defensive forces, employment of special-purpose forces.

2A:13 Aerospace Military 200 (3 h)

Continuation of 2A:18.

2A:31 Aerospace Military 300 (3 h)

Critical analysis of air power from dawn to the present, including development of air power doctrine, influence of technology on air power, uses of air power in military and non-military operations.

2A:28 Aerospace Military 400 (3 h)

Continuation of 2A:31.

2A:39 Aerospace Military Studies: Flight Instruction (3 h)

FAA regulations, flight computer, navigation, aerodynamics. Required for qualified APR/ROTC cadets; open to other students with consent of instructor.

Spring

2A:29 Leadership Laboratory (0 h)

Opportunity for cadets to experiment with and develop skills, techniques and attitudes to leadership and management; exercises include practice assignments in a military environment; cadets plan, develop and manage the cadre program senior faculty supervision and guidance; provides cadets with meaningful job with increasing authority and responsibility.

2A:37 Leadership Laboratory (0 h)

Continuation of 2A:29.

2A:112 Aerospace Military 500 (3 h)

Experiences civil-military relations, some of international environment, strategic requirements and the formation of defense policy. Fall.

2A:113 Aerospace Military 600 (3 h)

Continuation of 2A:112.

2A:114 Aerospace Military 400 (3 h)

Theory and application of basic management concepts, with emphasis on operation of an air force leadership, includes knowledge base of leadership and management profes-
sions. Fall.

2A:115 Aerospace Military 500 (3 h)

Manager’s world of war, politics, strategy, tactics, diplomacy, managing forces in crisis, includes leadership studies and the operational military within the air force. Spring.

Military Science

2A:23 The Military Branch (1 h)

Introduction to branches of our army and to army specialty concepts; military organizations, present size and structure of the army.

2A:24 Introduction to Leadership (1 h)

Basic leadership principles, tactical concepts, use of maps for map reading, and navigation and military operations.

2A:25 American Military History (1 h)

Luminary study of military history and evaluation of warfare, with emphasis on the role and development of the army.

2A:20 American Military History (1 h)

which is a prerequisite or cognate.

Air force classroom instruction is regularly supplemented by one- and two-day visits to air force bases; most cadets have the opportunity to make at least one such visit each semester.

Financial Aid

ROTC scholarships, providing tuition, books, laboratory fees and a $1,000 per month tax-free subsistence allowance, are available to high school seniors, ROTC cadets and qualified two-year program applicants. All cadets in the Advanced Course receive a $1,000 monthly tax-free subsistence allowance. Cadets are supplied with books for University classes taught by military faculty and uniform for training exercises. A $300 uniform allowance is provided to students who become commissioned. Students attending summer camps are paid while on duty, and receive travel allowances.

Special Programs

The Pershing Rifles, Black Berets and Arnold Air Society are fraternal organizations engaging in intercollegiate military com-
peitions. The Details of Angels Flight are auxiliary to Pershing Rifles and Arnold Air Society, respec-
tively, and members participate with cadets in many activities.

The departments also sponsor a small-arms rifle team. Cadets compete for individual local and national awards for leadership and academic achievement, athletics and military profi-
cency. The departments sponsor ceremonial and social activities throughout the year, including the Military Ball, Joint Awards Ceremony, Dining-In, and several parties.

Special Facilities

The Department of Military Science uses several areas north of Iowa City for practical field problems. It uses a variety of military equipment, such as helicopters and FM radios, in the practical leadership exercises and in support of the Pershing Rifles. Cadets visit Rock Island Arsenal and Camp Dodge, near Des Moines, to observe army operations and review equipment. Junior-year cadets also use the Camp Dodge leadership reaction course, orienteering course and rappelling facilities.
22:56 Introduction to Basic Military Skills 3 a.h.
Tactical reading course, marksmanship training, rappelling technique, communica-
tions and other skills used in special units with army equipment and leadership
challenges.
22:61 Introduction to Basic Military Skills 3 a.h.
22:62 Advanced Military Skills 3 a.h.
22:63 Advanced Military Skills 3 a.h.
22:68 Army Flight Instruction 3 a.h.
Optional course for flight training, if qualified volunteer.
22:96 President: Leadership and Instruction 3 a.h.
Third-year cadets instruct others in military skills, under faculty supervision; partici-
pants in combined leadership situations at Camp Dodge and during tactical training
exercise.
22:97 President: Leadership and Instruction 3 a.h.
Continuation of 22:96.
22:98 President: Leadership and Management 3 a.h.
Fourth-year cadets are taught leadership principles in paper and conduct military
and training exercises, under faculty supervision.
22:99 President: Leadership and Management 3 a.h.
Continuation of 22:98.
25:16 Advanced Leadership Development and Methods of Instruction 3 a.h.
Case studies are used to stress various factors affecting human behavior; studies
commander leadership problems; techniques and principles of instruction applying
leadership principles in tactical environment.
22:17 Leadership Small Unit Operations 3 a.h.
Principles of war and fundamentals of offensive and defensive operations; review
leading procedures, command orders, problem-solving.
25:18 Theory and Dynamics of the Military Team IV 3 a.h.
Detailed study of staff organizational concept; command and staff relationships and
functions; army administration and logistics; military law from viewpoint of unit
commander.
22:19 Seminar in Leadership and Management IV 3 a.h.
Continuation of 25:18, plus ethics, duties, standards and responsibilities of an
officer.

Russian

Department: Department: Kap T, Parret, Jr.
Major: Professor Naumov, Academic; Professor Surovikin; Associate
Professor, E. V. Neber, Assistant Professor, A. N. Chat, Associate
Professor, J. G. Caufield.
Course: 30 a.h.

The purpose of the Russian program is to give students training in both
the written and spoken Russian language and in Russian literature. The
program is designed to give students a broad understanding of Russian
language and culture.
Study of Russian is seldom an end in itself but rather a means to
other objectives. The Department encourages all of its begin-
ning students to pursue a joint major and to develop their interests in
other fields.

With the increasing importance of Russian as a language of
science and commerce, many students find that training in the
language is an important asset to careers in the natural and physical
sciences, engineering, medicine and business. Students of jour-
nalism, literature and the social sciences also have strength-
ened their career preparation through the study of Russian.
Some students major in Russian before going into law, international
relations or another profession; others as preparation for graduate
work in Slavic languages and literatures, comparative literature,
English or other humanities disciplines.

Russian majors with the B.A. and the required education courses occasionally seek teaching careers in secondary schools.
A number of governmental agencies regularly interview prospect-
ive candidates for employment with advanced training in Russian.
Students who develop an excellent facility with the language on
occasion pursue careers in communications, literature and technical
translation, and interpretation. This age of rapid communication
and transportation in a pluralistic society increasingly demands a
competence in other than one's native language.

Bachelor of Arts Program

Students who major in Russian must meet the general require-
ments for a degree in Liberal Arts and earn at least 26 semester
hours of credit in advanced Russian courses:
41:111-112 Intermediate Composition and Conversa-
tion 8 a.h.
41:113 Advanced Composition and Conversa-
tion 3 a.h.
41:171-172 Readings in Representative Russian Lit-
erature 6 a.h.
41:191 Russian Civilization 3 a.h.

Two of the following:
41:151 Russian Literature in Translation (1800-
1850) 3 a.h.
41:152 Russian Literature in Translation (1860-
1917) 3 a.h.
41:158 Solzhenitsyn 2 a.h.
41:181 Soviet Literature in Translation 3 a.h.

For a more complete background, Russian majors are urged to
include related courses in economics, geography, history or politi-
cal science among their elective courses.
All Russian majors are strongly encouraged to enroll in the
one-semester course 41:127 Phonetics and Pronunciation.
Instruction in Business Russian may be arranged with the consent
of the instructor by enrolling in 41:108 Special Reading.

The requirements for a minor in Russian can be fulfilled by
eight semester hours of third-year Russian.

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 constitutes
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.

Summer and Study Abroad Programs

The Department regularly encourages undergraduate and graduate
students to participate in intensive programs of language study
both in the United States and in the Soviet Union. In recent years an
increasing number of students have studied in summer and
semester programs at Lingering State University under the auspices
Other students have accelerated and refined their Russian language
skills in various intensive summer programs at major American
universities. Inquiries should be directed to the Russian depart-
ment office.

Master of Arts Program

The major emphasis of the graduate program at Iowa is literary,
thought improvement and refinement of the students' Russian is not
neglected. Graduates therefore study the development of Russian
literature, both as a national phenomenon and as a part of
European literature, and are expected to analyze writers’ styles, perceive literary devices, recognize literary influences and develop the ability for sound criticism of form, content and language of works in all genres. At Master of Arts degree candidates are responsible for reading the works on the Department’s reading list of Russian literature.

Candidates for the master’s degree must have completed the equivalent of the undergraduate major in Russian. Deficiencies in previous training may be removed by taking appropriate courses. Candidates for the master’s degree are required to complete a minimum of 30 semester hours of graduate work, with or without thesis. This program consists of courses over and above those which constitute an undergraduate major in Russian and should include courses in related fields such as comparative literature, history, philosophy and other languages. Four to eight semester hours may be received for thesis preparation. The candidates must pass a written and an oral examination; they must also demonstrate a reading knowledge of either French or German.

The program for the M.A. must include the following courses or their equivalents:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>41113-114 Advanced Composition and Convers</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>41211-212 19th-Century Russian Literature</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>41231 Soviet Literature</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>41249 Proseminar, Research Methods</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>41261 History of the Russian Language or Old</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>Church Slavonic</td>
<td></td>
</tr>
<tr>
<td>Two seminars and one course in pre-19th-century Russian Literature.</td>
<td></td>
</tr>
</tbody>
</table>

**Financial Aid**

Aid is available to graduate students in the form of scholarships, University fellowships, and teaching and research assistantships. It is awarded annually on a competitive basis to the best qualified applicants. Ordinarily teaching assistantships are not awarded to first-year students, although exceptions are sometimes made on the basis of advanced language skills. Applications are considered only for students who have been admitted to the Graduate College. Inquiries should be addressed to the departmental office.

**Coursework for Nonmajors**

The Department offers introductory courses in the Russian language for students who have specific language requirements. There are special reading courses designed to give students from other fields an opportunity to acquire a reading proficiency in Russian in either the social or natural sciences. A scientific Russian course is offered for students in sciences who need to develop reading ability for research purposes. Some courses are open to University students from all departments and are offered in English. These include survey courses in Russian literature and civilization, readings in Soviet literature and monograph courses on Tolsky and Dostoevsky.

**Special Activities**

Each year the Department presents several guest lectures and sponsored films. Students sometimes put on Russian plays. Russian Circle is an organization open to graduates and undergraduates for social activities. Participation in Russian Circle also provides students with the opportunity to practice speaking and to improve 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.

**Courses**

**For Undergraduates and Graduates**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>41191 Elementary Russian</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>41202 Elementary Russian</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>Prerequisite: 41101 or equivalent.</td>
<td></td>
</tr>
<tr>
<td>41202 Russian for Reading</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>Emphasis on reading scientific and technical Russian material; for students, especially those majoring in sciences, who need primarily to develop reading ability for research purposes.</td>
<td></td>
</tr>
<tr>
<td>41204 Russian for Reading</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>Prerequisite: 41202 or equivalent.</td>
<td></td>
</tr>
<tr>
<td>41206 Second-Year Russian</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>Standard second-year course recommended for students satisfying their foreign language requirement and planning further training in active use of the language. Prerequisite: 41102 or equivalent.</td>
<td></td>
</tr>
<tr>
<td>41208 Second-Year Russian</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>Prerequisite: 41202 or equivalent.</td>
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<tr>
<td>41401 Special Readings</td>
<td>1-4 s.h.</td>
</tr>
<tr>
<td>Prerequisite: 16-20 weeks hours of language instruction.</td>
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</tr>
<tr>
<td>41109 Intensive Conversation</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>Prerequisite: 41202 or equivalent.</td>
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<tr>
<td>41110 Intensive Conversation</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>Prerequisite: 41202 or equivalent.</td>
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<tr>
<td>41311 Intermediate Composition and Convers</td>
<td>4 s.h.</td>
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<tr>
<td>Prerequisite: 41202 or equivalent.</td>
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<tr>
<td>41312 Intermediate Composition and Convers</td>
<td>4 s.h.</td>
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<tr>
<td>Prerequisite: 41202 or equivalent.</td>
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<tr>
<td>41113 Advanced Composition and Convers</td>
<td>3 s.h.</td>
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<tr>
<td>Prerequisite: 41112 or equivalent.</td>
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<tr>
<td>41104 Advanced Composition and Convers</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>Prerequisite: 41112 or equivalent.</td>
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<tr>
<td>41502 Methods Russian</td>
<td>3 s.h.</td>
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<tr>
<td>41507 Phonetics and Pronunciation</td>
<td>2 s.h.</td>
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<tr>
<td>Prerequisite: 41102 or equivalent.</td>
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<tr>
<td>41501 Russian Literature in Translation</td>
<td>3 s.h.</td>
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<tr>
<td>Conducted in English, same as School of Letters 108:121.</td>
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<tr>
<td>41502 Russian Literature in Translation</td>
<td>3 s.h.</td>
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<tr>
<td>Conducted in English, same as School of Letters 108:122.</td>
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<tr>
<td>41519 Tolstoy and Dostoevsky</td>
<td>3-4 s.h.</td>
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<tr>
<td>Conducted in English, same as School of Letters 108:225.</td>
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<tr>
<td>41508 Dostoevsky</td>
<td>3-4 s.h.</td>
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<tr>
<td>Conducted in English.</td>
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<tr>
<td>41509 Modern Russian Poetry in Translation</td>
<td>3 s.h.</td>
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<tr>
<td>Conducted in English, same as School of Letters 108:119.</td>
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<tr>
<td>41517 Russian Literature in Russian Literature</td>
<td>3 s.h.</td>
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<tr>
<td>Conducted in Russian. Prerequisite: 41112 or equivalent.</td>
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<tr>
<td>41518 Readings in Representative Russian Literature</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>Conducted in Russian. continuation of 41171, may be taken as independent unit. Prerequisite: 41112 or equivalent.</td>
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<tr>
<td>41519 Soviet Literature in Translation</td>
<td>3 s.h.</td>
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<tr>
<td>Conducted in English, same as School of Letters 108:121.</td>
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<tr>
<td>41595 Russian Culture</td>
<td>3 s.h.</td>
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<tr>
<td>Conducted in English, same as School of Letters 108:215.</td>
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<tr>
<td>41591 Russian Civilization</td>
<td>3-4 s.h.</td>
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<tr>
<td>Conducted in English.</td>
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<tr>
<td>41599 Honors</td>
<td>3-4 s.h.</td>
</tr>
<tr>
<td>May be repeated to a maximum of 8-semester hours. Prerequisite: consent of Department.</td>
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</tr>
</tbody>
</table>
Science Education

Primarily for Graduates
4:1501 1890-Current Russian Literature 2 sh.
4:202 Old Russian Literature 2 sh.
4:2111 1990-Current Russian Literature 3 sh.
4:2121 1990-Current Russian Literature

Continuation of 4:211 may be taken as independent unit.
4:213 Russian Poetry 3 sh.
4:217 Soviet Literature 3 sh.
4:3100 Professor: Research Methods 15 sh.
4:232 Barnett: Tolstoy and Dostoevsky 3 sh.
4:261 History of the Russian Literary Language 3 sh.
4:380 Old Church Slavonic 3 sh.
4:175 Special Work 3 sh.
4:170 Matroyshka Thesis 3 sh.

Science Education

Head: Robert R. Yager

Degrees offered: M.A.T., M.S.E., Ph.D.

Undergraduate Program

The Science Education Program cooperates with the College of Liberal Arts in administering the General Science Program. Prospective secondary-school teachers may select one of five science-teaching emphases in General Science. The program in elementary education with a concentration in science is recommended for elementary majors with interest in science as a primary field. Special programs for high school students are administered by the Department, including environmental studies, Secondary Student Training Programs, Florida and Western Ecology Program, High School Research Participation Program, and various programs of Iowa's Academy of Science.

Graduate Programs

Certification Only
This special classification for graduate students who have earned bachelor's degrees without fulfilling requirements for a teaching certificate. The requirements include fulfilling all requirements in science, American government, history and philosophy of science that are necessary for students graduating from the teacher education program in science at the University of Iowa. In addition, the normal sequence of education courses totals 30 to 32 additional hours of credit. No degree objective is implied, although it is possible to require a certain number of graduate units. In such instances, the normal processing and faculty review would occur before any changes could be made.

The M.A.T. in Science Teaching
This degree is designed primarily for persons who desire to become teachers after they have completed a bachelor's degree. It features advanced work in science along with the course required for certification. It is a means by which students can attain a master's degree and certification at the same time. (Other Science Education degree programs assume that the candidate has already completed a certification program.)

The M.S. without Thesis
This degree is the one most appropriate for teachers who plan to remain in the classroom. It is not a research degree and is not designed for candidates to continue their education beyond the master's level. It is a 30-hour program requiring 26 hours in the sciences other preparation in the context fields where the teacher is assigned; and 12 semester hours of advanced work in science education.

The M.S. without Thesis, for Elementary Teachers
This degree is similar to the one above and has the same general requirements, but is designed for persons with general preparation as elementary teachers who have not emphasized science as undergraduates. The primary difference exists in the fact that courses in general science typically are used as one of the areas of science. The other area of science is also broadly defined, i.e., biology, physical science or earth science.

The M.S. with Thesis
This degree is appropriate for candidates who plan to continue for the specialist degree or the Ph.D. It features a thesis which can emphasize a problem in science education. If it is scientific research, the candidate must locate an appropriate professor in the science field to direct the thesis work. The program includes 20 semester hours, of which 10 hours must be completed in science education and 20 hours in two fields of science.

The M.S. for Science Supervisors
Since the need for supervision of science is often unique, a special program of required courses is outlined. Although this degree could be with thesis, most candidates find it desirable to complete additional coursework in lieu of the formal thesis. Nonetheless, research and work with program evaluation are required. Such pilot studies and publishable results usually center upon very practical curriculum problems. The special M.S. degree meets all the qualifications of the regular M.S. degrees. However, these are fewer electives required for this program, since special supervisory courses and experiences are required. (Problems remain in Iowa for special endorsement and certification as a supervisor without meeting all requirements for certification as a principal. However, other states have offered such certification upon completion of the program as outlined.)

Professional Improvement
This is a special status for graduate students who wish to complete additional coursework without further degree objective. Students so classified must be formally accepted as P.T. students and must meet regularly with an advisor. At the same time, there is great latitude in the types of courses and individual instruction sequences that are possible. Many students interested in special workshops, seminars, conferences and institutes are admitted as students in this category. If such students wish to apply for a degree at a later time, all credit completed while admitted for P.T. must be evaluated and the application is reviewed as if it is a new one for admission purposes.
Undergraduate Program

The undergraduate program in social work is intended 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. It encompasses several generalist-social work employment areas 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.

<table>
<thead>
<tr>
<th>Course</th>
<th>Component</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>30:31</td>
<td>Introduction to American Politics</td>
<td>4 a.h.</td>
</tr>
<tr>
<td>or 30:100</td>
<td>The American Political System</td>
<td>4 a.h.</td>
</tr>
<tr>
<td>31:1</td>
<td>Elementary Psychology</td>
<td>4 a.h.</td>
</tr>
<tr>
<td>31:3</td>
<td>General Psychology</td>
<td>4 a.h.</td>
</tr>
<tr>
<td>34:1</td>
<td>Introduction to Sociology: Principles Economics (661/2, 661/2, 661/2, or 661/100)</td>
<td>4 a.h.</td>
</tr>
<tr>
<td>42:102</td>
<td>The Field of Social Work</td>
<td>4 a.h.</td>
</tr>
<tr>
<td>42:131</td>
<td>Human Behavior in the Social Environment</td>
<td>4 a.h.</td>
</tr>
<tr>
<td>42:141</td>
<td>Social Work Practice I</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>42:142</td>
<td>Social Work Research</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>42:195</td>
<td>Field Experience</td>
<td>7 1/2 a.h.</td>
</tr>
</tbody>
</table>

A minimum of 12 semester hours of coursework is required in one department listed below in group A or B and nine hours in the other two groups. Most students select either sociology or psychology for the 12-hour requirement. One of the social science courses listed above can be applied toward this requirement, if the choice for the 12 hours is in that social science.

A. Social Sciences

- Anthropology
- Economics
- Geography
- Political Science
- Psychology

B. Humanities

- American Civilization
- English
- History
- Literature, Science and Arts
- Philosophy
- Religion

C. Related Disciplines

- Education
- Home Economics
- Journalism
- Nursing
- Recreation Education
- Urban and Regional Planning

Most students majoring in social work have ample opportunity for electives in social work as well as in other departments. Students may contact the School for a list of recommended electives.

Honors in Social Work

The School of Social Work has an Honors Program leading to a Bachelor of Arts with Honors in Social Work. Students interested in such a program should contact the School of Social Work.

Graduate Program

After satisfying first semester foundation requirements or their equivalents, students may choose one of the three concentrations described below. Students elect a concentration and a minimum number of hours in each of the other concentrations. Courses in other departments may also be included in concentrations. Concentrations will be modified periodically; applicants should secure a current description of the program.

Personal and Family Services prepares practitioners for direct service to persons, families and small groups. Content includes: study of functional and dysfunctional behavior, theory and practice of mental modalities, theory and research methodology as applicable to direct services, values and ethical questions, and contemporary issues in service delivery.

Organization of Human Services enables students to prepare for roles in social service organizations. Content includes administrative processes, planning, supervision, consultation and organizational development. Students examine organizational processes, the internatization of organizations in the community, evaluative
Graduate 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 applications (by January 1) are advised.

The School offers a special part-time study program leading to the M.S.W. program. Application may be made to begin this program in any semester. A part-time student is one who plans to complete the M.S.W. program in six semesters or more. An individualized program, as advanced, in cooperation with the student's advisor. The plan must include two full-time semesters (9.0 or more).

To qualify for admission, the applicant must meet the general requirements for admission to the Graduate College (see "Graduate College"), and have the approval of the social work faculty committee on admissions. Generally, a grade-point average of 3.0 on a 4.0 scale (based on junior/senior or at least 12.0 graduate level work) is required. Upper 25% of the class may be admitted with a grade-point average of less than 3.0. A bachelor's degree (B.S. or B.A.) from an accredited college or university is required, with a reasonable distribution of courses in the sciences and humanities.

The applicant's personal statement will be reviewed and evaluated. Experience in social work or a related field is viewed as documentation of commitment to the field and the applicant is encouraged to include the relevance of the work experience to social work. At least three references are required, and if the applicant is currently employed in social work or a related field, one or more references should be provided from applicant's place of employment.

Courses

Primary For Undergraduates

421 Helping Individuals and Families 2 s.h.
Introduction to social work profession, process and family. Skill development in direct contact, group and community. (May be repeated without a limit.)

423 The Field of Social Work 3 s.h.
Societal work as an institution; historical development; current roles of social work. Junior status required. Professors: 422/423, 425, 428, 431.

429 Social Work Program 3 s.h.

Provision of social services used by social workers with individuals, groups and communities: advanced communication skills; emphasis upon integration of theory and practice. Professors: 422/423, 425, 428, 431.

429 Social Work Program 3 s.h.

421 Individual Study 1-3 s.h.

429 Individual Study 1-3 s.h.

429 Field Experience 1-3 s.h.

429 Field Experience 1-3 s.h.

429 Internship 1-3 s.h.

429 Internship 1-3 s.h.

429 Senior Seminar 1-3 s.h.

429 Senior Seminar 1-3 s.h.

429 Selected Social Welfare problems, theory, research, and practice.

429 Internship 1-3 s.h.

429 Internship 1-3 s.h.

429 Internship 1-3 s.h.

429 Internship 1-3 s.h.

429 Internship 1-3 s.h.

429 Internship 1-3 s.h.

429 Internship 1-3 s.h.

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429 Internship 1-3 s.h.
Master of Arts

The Master of Arts degree in sociology requires 30 semester hours with thesis or 36 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 Contemporary 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. in Criminal Justice and Corrections

This program is designed for individuals desiring to prepare for careers in the criminal justice system. It provides the student with training in the social and behavioral sciences, the administration of justice, counseling techniques and administrative procedures. The program is administered by the Department of Sociology and has a strong sociological emphasis. A limited number of students are admitted to the program each year, so a low-faculty-student ratio is maintained. Arrangements have been made with local criminal justice agencies so that internship placements are available. This program requires a minimum of 45 s.h. and a research paper for the Master of Arts in Criminal Justice and Corrections.

Joint Program in Sociology and Law

A student may obtain a Master of Arts in sociology and a J.D. by fulfilling the basic requirements of both programs. The College of Law will credit up to 12 hours of graduate work taken after entering the joint program toward the 90 hours required for the J.D., even though these hours are also credited toward an M.A. in sociology. The Department of Sociology may grant, upon the discretion of a student’s M.A. committee, up to 12 hours of law toward the M.A. degree. This cross-credit is allowed a student to receive the J.D. and the M.A. by taking law more rapid than would be necessary if the two degrees were pursued independently. This program is highly individualized and allows the student to explore various aspects of the relationship between law and sociology.

Doctor of Philosophy

The Doctor of Philosophy degree in sociology requires a minimum of 72 semester hours of graduate-level coursework, including the post-M.A. courses 34.216 Intermediate Statistics and Data Analysis and 34.217 Theory and Research Design: comprehensive examinations; and a dissertation.

All doctoral candidates are examined in the basic tool areas of sociology—theory, history of theory, methodology and statistics. In addition, each is examined over one major and one minor area chosen from among the areas currently represented in the faculty, such as social psychology, deviance, criminology, family, stratification, organizations, theory, methods and statistics. A detailed statement of regulations for graduate study is available upon request. Prospective doctoral candidates should carefully explore this document.

Graduate Admission

Admission to graduate study in sociology normally requires a minimum undergraduate grade-point average of 3.0 and a total score of 1100 from the quantitative plus verbal sections of the Graduate Record Examination. In addition to the Graduate College procedures, the applicant completes a departmental application statement and uses its personal reference forms in obtaining three letters of recommendation. Applications can be submitted at any time, but should be completed two months before the start of the academic session for which admission is requested. The deadline for applying for departmental financial support is March 1.

Admission decisions are based on a composite consideration of prior academic performance, personal reference letters, scores on the Graduate Record Examination and the applicant’s statement of reasons for pursuing advanced work in sociology. For admission there is no specific coursework expected as an undergraduate, but a background in the social sciences with some mathematical training is useful. A foreign language is not required for admission and there are no foreign language requirements for either the M.A. or Ph.D. degrees in sociology. Inquiries concerning admission should be directed to Phyllis Peterson, Admissions Committee, Department of Sociology.

Admission to the M.A. program in Criminal Justice and Corrections requires a B.S. or a B.A. degree, a grade-point average of 2.75 and a total score of 1000 from the quantitative plus verbal sections of the Graduate Record Examination.

Enrollment in this program is currently limited to five admissions per year.

Graduate Financial Aid

The Department of Sociology offers three types of awards to graduate students: teaching assistantships, research assistantships and teaching-research fellowships. Resident tuition is charged out-of-state students who receive awards. Students who receive assistantships are obligated to work twenty hours each week for faculty members on either teaching or research assignments. The department may also offer tuition scholarships to some students.

Special Facilities

The department maintains a card punch, two terminals for communicating with the University’s main computer and a terminal for access to one of the University’s Hewlett-Packard 2000F educational computers. Also available for faculty and students are the facilities of the Center for Research in Interpersonal Behavior (CRIB), a data archives unit and the Iowa Urban Community Research Center (IUCRC). The basic facility in CRIB is a small-group laboratory complex with audio- and video-tape and interactive process recording equipment. The data archives house the results of numerous surveys which are available to faculty and students for teaching and research purposes. IUCRC maintains a research library, data bank and laboratory. (See the Research Activities section of this catalog.)

Courses

For Undergraduates Only

Note: All senior major courses are required to take 34-1, 34-2, 34-10 and 34-11.

34.1 Introduction to Sociology: Anthropology

3 s.h. Scientific approach to the analysis and evaluation of culture and social organization; may be taken to fulfill the social science core requirement.

34.2 Introduction to Sociology: Problems

3 s.h. Analysis of selected variables of problematic and divisive behaviors from a sociological perspective. May be taken to fulfill the social science core requirement.

34.10 Theory, Research and Statistics

3 s.h. Introduction to basic scientific concepts, emphasis on theoretical debates, the development of reasonable propositions and the logic and meaning of proof concepts in sociology.
the research process; general issues associated with bridging social research, psychology and education research; understanding research data and generating research findings. Prerequisites: 34-1, 34-2 and a declared major in sociology.

34-1 Theory, Research and Statistics

3 a.h.

34-12 Logic of Scientific Social Science

3 a.h.

Exploration of selected topics in contemporary philosophy of social sciences. Prerequisites: 34-10, 34-11.

34-15 Social Research

4 a.h.

34-16 Intermediate Research and Data Analysis

3 a.h.

Introduction to methodological techniques associated primarily with the general linear model: Analysis of variance and covariance and corresponding computer programs. Prerequisites: 34-214 and 34-215 in computer core.

34-217 Theory and Research Design

3 a.h.

Introduction to research design: conceptualization and operationalization of theoretical variables; choice of research units; experimental, quasi-experimental and survey research design; developing and testing research questions. Prerequisites: 34-216.

34-218 Advanced Statistics and Data Analysis

3 a.h.

Selected topics. Prerequisites: advanced graduate standing and consent of instructor. May be repeated.

34-219 Qualitative Research Methods and Data Analysis

3 a.h.

Selected topics. Prerequisites: advanced graduate standing and consent of instructor. May be repeated.

Social Psychology

34-120 Principles of Social Psychology

3 a.h.

Basic concepts and principles of social psychology; personality, interaction and intergroup processes.

34-121 Social Psychology of Conventional Behavior

3 a.h.

Social psychological support of consumer behavior and structural aspects of the marketplace.

34-122 Social Psychology of Mental Illness

3 a.h.

Theories, methods and interpretations of studies of the social psychology of mental health and mental illness and of the psychiatric hospital as a social institution. Prerequisites: 34-1, consent of instructor.

34-123 Mass Communication

3 a.h.

Forms of communication (oral, written and electronic) and how these forms are integrated with social structures and processes. Prerequisites: 34-212.

34-125 Small-Group Analysis

3 a.h.

Small group as a fundamental unit in the study of social relations: a social unit of community psychology; as a unique subject of research interest. Prerequisites: 34-212 or graduate standing and consent of instructor.

34-126 Collective Behavior

3 a.h.

Social issues: social movements and social movements. Prerequisites: 34-120.

34-128 Intergroup Perception

3 a.h.

The theory and research of social interaction; social psychology. Focus on social interaction and intergroup behavior; social interaction and personal reality. Prerequisites: 34-125 or consent of instructor. Prerequisites: 34-120 or consent of instructor.

34-129 Development and Control of Aggression

3 a.h.

The social interaction of social factors contributing to the development of interpersonal aggression, the circumstances underlying aggression and the social requirements for aggression. Prerequisites: 34-123 or 34-1.

34-125 Intercultural Conflict

3 a.h.

Use of social psychological theory and research to analyze intergroup situations. Prerequisites: 34-120.

34-128 Social Psychology of Alcohol Use and Community Problems

3 a.h.

Social psychology of the abuse and misuse of alcohol and its impact on the social and psychological processes. Prerequisites: 34-120.

34-130 Contemporary Approaches to Social Psychology

3 a.h.

use of social psychology theory and research to analyze intergroup situations, and conflict studies. Prerequisites: 34-120.

34-131 Empirical and Qualitative Methods in Social Psychology

3 a.h.

methodology and techniques for the design and conduct of social psychological experiments and field studies. Prerequisites: advanced graduate standing and consent of instructor. May be repeated.
34:254 Seminar In Small-Group Analysis 3 a.h.
Selective Seminars. Prerequisite: advanced graduate standing and consent of in-
structor. May be repeated.
34:259 Miller-In Colloquium Binding 3 a.h.
Selected topics. Prerequisite: advanced graduate standing and consent of in-
structor. May be repeated.
4:229 Research Practicum In Social Psychology 3-4 a.h.
Graduate group research on selected topics in social psychology. Prerequisite: consent of
Professor. May be repeated.

Delinquency and Control 34:145 Criminology 3 a.h.
Nature and causes of crime; the criminal justice process; correctional treatment and
crime prevention. Prerequisite: 34:1.
34:141 Juvenile Delinquency 3 a.h.
Delinquency as an individual and social problem; theories of delinquency causation;
low status and the B-count society; methods of correction and preven-
tion. Prerequisite: 34:1.
34:145 Sociology of Controlling 3 a.h.
Analytical survey of society, society and function of the American correctional
process. Prerequisite: 34:140 or 34:141 or consent of instructor.
34:146 Delinquency and Control 3 a.h.
Theories of delinquency and analysis of major control systems and mecha-
nisms with emphasis on the relationship between social control efforts and social delinquency.
Prerequisite: 34:140 or 34:141 or consent of instructor.
34:157 Prevention of Crime and Delinquency: Strategies and Pro-
blems 3 a.h.
Analysis of intervention strategies in the areas of crime and delinquency emphasizing
policies in theory, method, evaluation of intervention techniques. Prerequisite: 34:1
40 or 34:141 or consent of instructor.
34:148 Internship In Criminal Justice and Corrections 1-4 a.h.
Supervised field work in a criminal justice or correctional agency with formal
instructor in theory and practice. Prerequisite: 34:140 or 34:141 or consent of
instructor. May be repeated.
34:152 Sociology of Law and Criminal Justice 3 a.h.
Perpetrators of law: factors of law in society's sanction and operation of the criminal
justice system. Prerequisite: 34:140 or 34:141 or consent of instructor.
34:167 Urbanization and the Family 3 a.h.
Reactions of crime causation and their relationship to the cultures in which they have
been studied. Prerequisite: consent of instructor and consent of instructor.
34:252 Seminar: Sociology of Law 3 a.h.
Law, society. May be repeated in college. Development of relationship between law,
social processes, social groups and other areas of social control. Prerequisite: graduate
standing and consent of instructor.
34:254 Seminar: Selected Topics in Deviation and Control 3 a.h.
Course in special topics in deviation and control with particular emphasis upon the
oretical and methodological issues. Prerequisite: graduate standing and consent of
instructor. May be repeated.
34:157 Delinquency and Control 3 a.h.
Critical analysis of methods of prevention with particular emphasis upon significant
theoretical and methodological issues. Prerequisite: graduate standing and consent of
instructor.
34:156 Seminar: Professional Seminar In Criminal Justice 3 a.h.
Introduction to the current issues confronting through discussion and individual
research. Prerequisite: enrollment in M.A. program in Criminal Justice and Correc-
tional administration.
34:150 Seminar: Political Sociology 3 a.h.
Selected topics in political sociology.

Family, Socialization and Society 34:108 Sociology of Sex Roles: Introduction to Women's Studies
3 a.h.
Designed as a basic social science approach to sex roles and sex role stereotyping; includes
analysis of both past and female role and sex. Prerequisite: 34:1 or consent of
instructor. Same as American Civilization 45:108.
34:190 Aging, Society 3 a.h.
Societal age stratification; age-stratified roles; stereotypes of aging; contributions and
challenges during the life cycle; unique problem situations; social policy regarding
aging and the aged. Prerequisite: 34:1 or consent of instructor.
34:150 Culture and Personality 3 a.h.
Relationship of ascultural and psychological variables in understanding human
behavior. Description and analysis of personality in personality and socialization. Prere-
quisite: 34:1; 115:3 or 115:30. Same as Anthropology 35:150.
34:199 Social Development of Children 3 a.h.
Learning and development of interpersonal behaviors from infancy through early
adolescence. Prerequisite: 34:1 or Psychology 3:1.
34:159 The Family In Various Societies 3 a.h.
Family systems in comparative and historical perspective. Comparison of the American
family with similar families in both modern and pre-modern societies. Prerequisite:
instructor.
34:181 Sociology of Dating, Courtship and Mate Selection 3 a.h.
Socialization and the role marriage underlying the mate selection and dating;
socialization and the influence of the love stories; psychological aspects of
mate selection. Prerequisite: 34:1 or consent of instructor.
34:182 Processes of Socialization 3 a.h.
Examination of general mechanisms and processes of socialization, including educa-
tional and socialization; variations by social class and other group. Prerequisite: 34:1
or consent of instructor.
34:183 Socialization and Self-Concept 3 a.h.
Analysis in self and evaluation of significant research findings; differentiation of
theoretical positions and data source. Prerequisite: graduate standing.
34:194 Socialization and Self-Concept 3 a.h.
Analysis in self and evaluation of significant research findings; differentiation of
theoretical positions and data source. Prerequisite: graduate standing.
34:155 Sociology of the Family 3 a.h.
Selected theoretical and methodological issues. Prerequisites: advanced graduate
standing and consent of instructor. May be repeated.
34:156 Sociology of the Family 3 a.h.
Selected theoretical and methodological issues. Prerequisites: advanced graduate
standing and consent of instructor. May be repeated.
34:185 Social Behavior of Children 3 a.h.
Theory and research on learning and development of interpersonal behaviors from
infancy through childhood. Prerequisite: consent of instructor.
34:181 Seminar: Selected Problems in Social Development 3 a.h.
Selected problems with an emphasis on children of adults. Prerequisite: consent of instructor.

Social institutions and Social Change 34:108 Social Institutions: Introduction to Women's Studies
3 a.h.
Designed as a basic social science approach to sex roles and sex role stereotyping; includes
analysis of both past and female role and sex. Prerequisite: 34:1 or consent of
instructor. Same as American Civilization 45:108.
34:189 The Social Work 3 a.h.
Social welfare as a social institution; historical development; settings of social work
practice; role of theory and research. Prerequisite: student standing. Same as Social
Science 42:102.
34:147 Political Sociology 3 a.h.
Sociological analysis of political behavior and processes; political events; political
institutions; political change; the relationship of the political system to the
social system. Prerequisite: 34:1.
34:151 Social Problems of Underdeveloped Areas 3 a.h.
Social institutions and organizations, social change and the consequences of indus-
trialization. Prerequisite: 34:1 or consent of instructor. Same as Anthropology
311:415.
34:130 Opinion polling 3 a.h.
Role of public opinion in making political policy, formation and change of political
attitudes and opinions and public opinion measurement and public opinion, under-
standing opinion polls. Same as Political Science 30:195.
34:156 Mass Communication 3 a.h.
Mass communication in modern society. Prerequisite: 34:1 or consent of instructor.
34:150 Multidisciplinary staff of interdepartmental relations with special emphasis given to
interdepartmental and interdepartmental science in the study of American
minority groups. Prerequisite: 34:1 or Anthropology 115:3 or American Studies
310:115. Same as Anthropology 310:115.
34:181 Sociology of Education 3 a.h.
Introduction to interdepartmental relations of medical sociology: disease and the
health care, family practices and philosophies, health institutions (the hospital), the cost
and organization of health services, medical education. Prerequisite: 34:1.
Latin American Literature
35:237 Modernism 3 s.h.

Plus three fields (nine hours) taken from two or three of the following areas:

Area A
35:230 Contemporary Spanish American Novel 3 s.h.
35:236 New Trends in Spanish American Fiction 3 s.h.
35:246 Novel of the Mexican Revolution 3 s.h.
35:263 Contemporary Cuban Narrative 3 s.h.

Area B
35:243 Spanish American Colonial Literature 3 s.h.
35:232 Spanish American Essays and Thinkers 3 s.h.
35:242 Spanish American Literature of the 19th Century 3 s.h.

Area C
35:257 Modernism 3 s.h.
35:244 Spanish American Poetry of the 20th Century 3 s.h.

Area D
35:251 Spanish American Drama 3 s.h.
35:245 Spanish American Short Story 3 s.h.
35:257 Chilean Short Story 3 s.h.

Area E
A course in Brazilian literature 3 s.h.

Contemporary Language and Syntax
35:208-209 Graduate Spanish Language I-II 8 s.h.
35:210 Studies in Style 3 s.h.
35:217 Literary Theory and Explication of Texts 2 s.h.

Professional Training
35:211 Research Methods and Bibliography 2 s.h.
35:233 Seminar in College Teaching 1 s.h.

Seminars
Two seminars at The University of Iowa (300 level) 4 s.h.

Specialization
Students in the Hispanic Literature program (Program II) desiring to specialize in an area (Medieval literature, Golden Age Literature, Modern Spanish literature, Latin American literature, or another approved area) may be allowed to substitute courses in that area for one non-required course in each of the other areas. However, it is strongly recommended that wherever possible these courses be taken in addition to those in the basic identical program, as initial employment opportunities are enhanced by having a wide spread in areas of preparation.

Program II: Emphasis on Language

History of the Spanish Language and Medieval Literature
35:251 Medieval Spanish Literature I 5 s.h.
35:253-254 Historical Spanish Grammar I-II 4 s.h.

Comparative Linguistics
35:250 Romance Linguistics 3 s.h.

Golden Age Literature
35:225 Drama of the Golden Age 3 s.h.
35:226 Cervantes—Don Quixote 3 s.h.

Modern Peninsular Literature
One of the following:
35:220 19th Century Spanish Novel 3 s.h.
35:221 19th Century Spanish Poetry and Drama 3 s.h.
35:223 20th Century Spanish Poetry 3 s.h.
35:224 20th Century Spanish Novel 3 s.h.
35:228 20th Century Spanish Essay 3 s.h.
35:241 20th Century Spanish Drama 3 s.h.

Latin America Literature
35:297 Modernism 3 s.h.
Two other courses taken from two of the fields listed in Program I

Contemporary Language and Syntax
35:157 Spanish Phonology 3 s.h.
35:208-209 Graduate Spanish Language I-II 8 s.h.

Professional Training
35:211 Research Methods and Bibliography 2 s.h.
35:233 Seminar in Teaching 1 s.h.

Seminars
Two seminars in language at The University of Iowa (300 level) 4 s.h.
Ph.D. Comprehensive Examinations
The doctoral comprehensive examinations assure a general knowledge of Spanish peninsular and Spanish American literatures and their three broad fields, such as a literary genre or a historical literature, chosen by the candidate and represented by the following groups:

Spanish Language and Styles

Lusophone Literature

Modern Literature of Spain

Spanish-American Literature

Luso-Brazilian Literature

Candidates following the program with emphasis on language take comprehensive examinations in two language fields and one content literature field, or, with permission of the Department, in three language fields. The group distinction outlined above does not apply; the literary field if one is chosen, may be from either group.

The length of time during which the doctoral examinations are taken is determined by the candidate. They may be taken during the course of a semester or limited to a shorter period. Three written four-hour examinations are administered, followed by oral examination.

Financial Aid
Teaching and research assistantships are available to qualified graduate students. Normally, two years of such support are available for the completion of a master's degree, and four years for the Ph.D. As long as a graduate student's studies and performance meet departmental standards, he or she will continue to receive support over a reasonable period of time, but usually not over four years. A student wishing financial support should apply directly to the departmental office.

Special Facilities
The Language Laboratory provides facilities for language learning, teaching, and research. These include standard and shorthand radionics, tape recorders, record players, soundproof recording rooms, two drill rooms with 60 dual-channel tape recorders providing a simultaneous master duplicating and student record, an electronic classroom, a soundproof work room, 16mm and film 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 program, "Success en Español" ("Habilidades en Español"), sponsored by the department, is broadcast weekly over University radio station KUSJ. The Spanish-Portuguese Players, a group of volunteer student actors, provide dramatic programs in Spanish for students and others in the local area, and on request perform at other campuses in the state.

Spanish Courses

Primarily for Undergraduates
As undergraduate studies who last less than two years of high school study in Spanish will be placed in a freshman or sophomore semester class. It is not unusual for more than two years of high school Spanish to be placed in a sophomore semester class or in a sophomore or junior semester class. Prospective and entering students should consult a departmental advisor. We advise students who have taken college Spanish or other Spanish language studies to place the placement test. Transfer students who have taken college Spanish or other institutions will be placed according to criteria previously computed.

Spanish and Portuguese

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3-4 h.

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3 h.

3 h.
3960 Special Work 2 a.h.
Written approval of chairman required.

3970/B Interanea Portuguesa 4 a.h.
Open to graduate students and language majors.

3981/0 Introduction to Brazilian Literature 3 a.h.

3982/0 Introduction to Portuguese Literature 3 a.h.

3983/0 Modern Brazilian Fiction 2 a.h.

3984/0 Modern Portuguese Fiction 2 a.h.

3985/0 Brazilian Civilization 2 a.h.
Conducted in English.

3986/0 Portuguese Civilization 3 a.h.
Conducted in English.

3987/0 Thirteen-Year Composition and Conservation 4 a.h.
Prerequisite: 1062 or equivalent.

3988/0 Thirteen-Year Composition and Conservation 4 a.h.
Prerequisite: 1067 or equivalent.

3989/0 Special Work 1-3 a.h.
Written approval of chairman required.

3990/0 Special Work 1-3 a.h.
Written approval of chairman required.

3990 Seminar: Machado de Assis 2 a.h.

Speech and Dramatic Art, Broadcasting and Film

Department: Chairman: Samuel L. Becker


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

The Department is concerned in communication as a means of personal expression and development; with communication as the major vehicle through which people adjust themselves to their society and their society to themselves; with communication as the essential process for the operation of any society, especially the highly technological society, with rhetoric as well as functional communication. These concerns with communication are manifested in two ways: faculty attempts and attempts of the Department's students to better understand communication processes, and joint attempts to help improve abilities to communicate effectively, whether as orators or directors, copywriters leaders, supervisors, participants in a group, film-makers, broadcasters, designers, playwrights, teachers, sponsors or parents.

The Department has six major divisions, whose emphases and distinctive courses are described below in the headings "Interdivision Courses," "Speech Education," "Dramatic Art," "Rhetorical Societies," "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 dramatic art division, at least one course in the broadcasting and film division and at least one course in the rhetorical studies 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.

Requirements for the Master of Arts

A minimum of 30 semester hours including 36-300 Introduction to Research or its equivalent.

A research thesis, or, for the nonthesis degree, a graduate seminar in which significant original research is done.

Successful completion of a six-hour written examination, the scope of which is determined by the candidate's dissertation and his or her graduate committee.

Cumulative GPA for courses on plan of study, 3.0.

Application deadline for fall or summer term, February 30 for student wishing to maximize probability of admission. Minimum cumulative undergraduate GPA required for admission in good standing, 2.75.

Master of Fine Arts in Dramatic Art

See Dramatic Art section.

Requirements for the Educational Specialist (for Junior College Training)

A minimum of 60 semester hours, including 36-300 Introduction to Research, a course in the teaching of speech, an approved seminar and at least 15 semester hours completed in the College of Education's graduate program in higher education.

Successful completion of a research report.

Satisfactory performance on a six-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.

A course in introduction to research or its equivalent, at least two courses in theory taken within the Department, and others as determined by the student's adviser and graduate committee, in consultation with the student.

Successful completion of a qualifying examination and demonstrated competence in one's research area.

Substantial scholarly dissertation.

Minimum cumulative GPA of 3.0 for courses on plan of study.

Application deadline for fall or summer term, February 30 for student wishing to maximize probability of admission. Admission decisions are based upon a compensatory consideration of the applicant's undergraduate achievements, letters of reference and other evidence of scholarly potential or achievement. Graduate Record Examination result and samples of one's scholarly work are desirable for this latter purpose.
Interdivisional Courses

36:10 Workshop in Speech and Dramatic Art 3 s.h.
Methods of analysis, literary research, communication theory, and related formal areas; practice in oral literature, debate, dramatic monologue, and original verse. Student must be a high school senior to receive credit.

36:60 Voice Improvement for Speakers and Actors 3 s.h.
Practical instruction in voice and speech for public speakers, teachers, lecturers, broadcasters, and actors; includes study of principles of effective verbal control, speech production and projection, and introduction to the phonetics, prosody, and pronunciation of standard American English.

36:67 Oral Interpretation of Literature 2 s.h.
Instruction in principles and problems of reading poetry and prose in auditions; analysis, interpretation, evaluation; recommended for students in elementary education and English.

38:00 Honors in Speech and Dramatic Art 2 s.h.
Open to juniors and seniors admitted by permission.

38:161 Readers’ Theatre 2 s.h.
Critical analysis and oral presentation of even complex works of fiction, realism, poetry and drama; periods and genres of literature studied vary by semester.

38:090 Introduction to Research 1 s.h.
Satisfactory performance in all new graduate students in speech and dramatic art except those enrolled for degree in Master of Fine Arts; problems of selecting and developing research problems; study and application of representative methods and techniques of research; literature, discussions, readings, papers and reports; guidance in research.

38:365 Master’s Thesis 1 s.h.

38:966 Ph.D. Dissertation 1 s.h.

Electives in speech and dramatic art:

Noproduction or nonperformance courses 6 s.h.

In addition to the secondary education T.E.P. foundations courses, students seeking teacher certification in speech and dramatic art must also register for:

75:160 Methods: Speech (or 36:160) (fall semester) 3 s.h.
75:191-192 Observation and Practice in the Secondary School 3 s.h.
75:178 Seminar: Curriculum and Student Teaching 1-3 s.h.

Majors and minors are advised to complete the historical-cultural core requirement with 11:31-52 Drama in Western Culture and their social science core requirement with 02:01 Language and Society and 30:01 Introduction to American Politics. Majors are strongly advised to complete a minor certification in English or other traditional field to strengthen both their major and employment opportunities, and to accumulate a record of achievement in University forums, broadcasting and film, readers’ theatre and theatre activities.

Minor Certification in Speech and Dramatic Art

Completion of twenty semester hours in speech and dramatic art is required. These hours must include speech methods and a distribution of at least two courses in any two of the following three areas: 1) public communication (communication theory, interpersonal communication, argumentation, discussion and public speaking courses); 2) theatre and dramatic art (acting, stagecraft, technical theatre and oral interpretation); 3) broadcasting and film.

Courses

38:175 Workshop in Group Oral Interpretation 1 s.h.
Students will study the techniques of group oral interpretation. Prerequisites: speaker must present a mature group’s theme program. One week. Same as 75:175.

38:180 Workshop in Teaching Mass Communication and Media in the Secondary Schools 1 s.h.
Students will engage themselves in an extensive study of the nonprint media with emphasis on film criticism. Students will produce both radio and film programs. Two weeks. Same as 75:180.

38:181 Workshop in Interpersonal Communication 1 s.h.
Designed especially for the public school teacher who is concerned in learning the basic processes of interpersonal communication. Related to interpersonal communication and human relationship study in the classroom situation. Two weeks. Same as 75:181.

38:183 Workshop in Children’s Literature and Creative Dramatics 1 s.h.
Students will design themselves a variety of children’s stories, then various presentations of each child’s Dramatics. Students will perform in the use of acting, movement, voice, rhythm, and music. Two weeks. Same as 75:182.

38:107 Directing Speech Activities 3 s.h.
Planning, organizing and evaluating curricular and cocurricular dramatic and debate programs at the secondary level. Course will cover the establishment of curriculum goals, idea generation, audience analysis, preparation for various types of debate and speech activities, and justifying curricular programs in the secondary schools. Spring semester.

38:108 Methods: Speech 3 s.h.
Teaching methods, theoretical and formal, consideration of various aspects of teaching in teaching, curricular programs, objectives, instructional materials and methods, effects of oral and written criticism and evaluation, teaching and grading, the nature and reference, projects and sources of evaluation, practice in various speech and communication activities, and the nature and reference, sources of evaluation, practice in various speech and communication activities.

36:30 Interpersonal Communication 3 s.h.
36:179 Workshop in Teaching Dramatics, Forensics and Speech art. Methods, resources, such visual aids, programs and evaluation in teaching and supervising students in courses and extracurricular activities; opportunities for observation, demonstration and practice in teaching and speech development. 3 s.h.
36:520 Colloquium Teaching Freshmen Rhetoric art. Lecture-discussion course exploring formal and informal processes involved in teaching composition, public speaking and reading. Same in English 173-176.
36:201 English Language, Speech and Dramatic Art Education 3-4 s.h.
Students will develop, compare and evaluate student-centered teaching activities, teacher-centered learning and teaching strategies, and various classroom and teaching approaches. Students are expected to develop personal philosophies on speech education; to explore contemporary issues in secondary teaching such as understandability, behavioral objectives, competency-based education, student and teacher competencies, discipline, curriculum development and teacher evaluation.
36:325 Contemporary Communication Education 2-4 s.h.
Course is designed to increase the teaching competence of college instructors. Basic learning theories and student competencies will be explored. Students will devise college-level curriculum including course justification, content, scope, philosophy, instructional goals and behavioral objectives, and suitable tools for teacher and student evaluation. Emphasis in the course is on the "basic course" in speech. Students will pursue a pedagogical research topic of their choice.

Communication Research
Professor in charge: John W. Fowles
Degree offered: M.A., Ph.D.
The program in communication research leads either to the M.A. or the Ph.D. degree. Programs designed for individual students provide the background for and experiences 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 to select appropriate courses from those listed below. In general, Ph.D. candidates in this program must complete the statistics sequence in the Depart-
ment of Psychology and one in the College of Education, and take 26:203 Philosophical Problems of the Social Sciences in the Department of Philosophy. Work is advanced statistics and communication theory required. The research tasks required.

Courses
36:40 Communication Theory in Everyday Life 3 s.h.
For undergraduates only. Consideration of several approachable positions in connection to theory and application of logic in the solution of daily-life problems.
36:70 Introduction to Research 3 s.h.
For underdgradable only. Examination of the nature of research in communication. Introduction to research in communication. Introduction to research in communication. Introduction to research in communication. Introduction to research in communication.
36:105 Introduction to Languages and Communication 2 s.h.
Relates theory of language to practice in interpersonal communication. Introduction to research in language and communication.
36:107 Directing Speech Activities 3 s.h.
Same as Speech Education 70:102.
36:135 Communication and Conflict 3 s.h.
Consideration of several implications of communication, theories and conflict theories. Optional: experiential required.
36:222 Introductory Communication: Theory and Research 3 s.h.
Survey of basic group research and theory.
36:233 Research Methods in Communication 3 s.h.
Principles and methods used in conducting experimental research in speech and dramatic art.
36:242 Communication Research 3 s.h.
Review and analysis of quantitative research on interpersonal communication.
36:265 Personality in Intercommunication 3 s.h.
Same as Sociology 202-206.
36:330 Applications of Communication Behavior 3 s.h.
Research and theory on acquisition of information, communication behaviors, including language behavior, attitudes and social rules.
36:335 Research Practices 3 s.h.
Opportunity for completion of individual research projects begins in other courses.
36:390 Seminar: Language Varieties 3-4 s.h.
Research problems on pragmatic aspects of language, varying from accent to commen.
36:521 Seminar: Problems in Group Communication 3-4 s.h.
Focus on problem area is small-group research, problems area changing into one or more original research.
36:522 Seminar: Communication Research 3-4 s.h.
Focus of seminar changes from area to area; among other topics to which seminar topics may be the psychological, methodological, original research required. Same as 36:390.
36:553 Seminar: Rhetorical and Communication Theory Construction 5-6 s.h.
Focus of seminar changes from area to area; among other topics to which seminar topics may be the psychological, methodological, original research required. Same as 36:390.

Rhetorical Studies
Professor in charge: Douglas S. Doggett
Degree offered: M.A., Ph.D.

Bachelor of Arts
This major is recommended for students preparing for active participation in public affairs or teaching. It is intended to serve as an effective focus for a student's intellectual, moral, and aesthetic development. It is recommended for students who wish to prepare for work in fields related to the arts and humanities, for students who wish to pursue graduate study in the humanities, and for those who wish to pursue other careers in the arts and humanities. It is recommended for students who wish to pursue graduate study in the humanities, and for those who wish to pursue other careers in the arts and humanities. It is recommended for students who wish to pursue graduate study in the humanities, and for those who wish to pursue other careers in the arts and humanities. It is recommended for students who wish to pursue graduate study in the humanities, and for those who wish to pursue other careers in the arts and humanities. It is recommended for students who wish to pursue graduate study in the humanities, and for those who wish to pursue other careers in the arts and humanities.

Programs for majors include:
36:53 Voice Improvement for Speakers and Actors
One of the following:
36:30 Communicating in Public
36:31 Group Communication
36:32 Interpersonal Communication
36:57 Oral Interpretation of Literature
36:151 Reader's Theater

One of the following:
36:124 Theory and Practice of Argument
36:125 Theory and Practice of Persuasion
36:126 Interview and Conference Methods
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 science.

Forensics
Through forensics, the public address student at Iowa has the opportunity to expand research skills, develop improved listening habits, work on organizational and amplification methods, and use all public speaking skills before audiences outside the classroom. Students may choose to work in debate, oratory, interpretative reading or expository speaking. Each student will have the opportunity to work with experienced instructors at the University and to receive detailed critiques 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 teaching in high schools and junior colleges and/or for proceeding to the doctorate. The program may include the preparation of a thesis, according to the decision of the student and advisor. The program will be:

Introduction to Research (36:308):
At least 15 hours of courses in rhetoric and public address including a seminar; At least six hours of courses in other divisions of this or related departments; A course in the bases of speech (voice and phonetics) or evidence of adequate previous training; And A comprehensive examination.

The Doctor of Philosophy Program
The program leading to the Ph.D. degree is designed to give the candidate a mature grasp of the field of learning and to develop the research competence essential to a life of productive scholarship. For basic requirements, see the latest sections of this department's description.

Courses

Speech and Dramatic Art, Broadcasting and Film

36:60 Communication Theory in Everyday Life

36:70 Resistance to Persuasion

36R:122 Communication and Contemporary Culture

36R:132 Anglo-American Public Communication: Early Period

36R:133 Anglo-American Public Communication: Later Period

36R:135 Contemporary Public Communication
Examination of ways in which cultural norms and communicative forms shape the popular arts of any given society.

Broadcasting and Film

Professor in charge: Dudley Adams, Robert Pepper
Degree offered: B.A., M.A., Ph.D.

Bachelor of Arts

This program is intended for the student who seeks an undergraduate education in the broadcast and film media and their relationship to the larger field of the communication arts. The program is offered within the context of a liberal education and is not regarded solely as preparation for a professional career. Students may emphasize either broadcasting or film in their selection of elective courses, but maximum requirements limit all students to exposure to historical and evaluative courses in both broadcasting and film, and to experience in the production of materials for broadcast and film media.

The broadcasting and film major requires a minimum of 24 hours in the Department of Speech and Dramatic Art including at least nine hours of production and at least nine hours of non-production courses in the Division of Broadcasting and Film.

Graduate Programs

The Master of Arts degree emphasizes research in critical, historiographic, historical and policy issues relating to broadcasting and film. M.A. candidates in film can emphasize production in a plan of study balancing the arts and scholarly aspects of the field. The major emphasis of the Ph.D. programs in broadcasting and film is the development of research competence. For basic requirements, see the initial sections of this department's description.

Facilities

Production courses in broadcasting are housed in the University Television Center and in the studios of University radio station WSUI. The large television studio in the center is equipped with three monochrome standard broadcast cameras, teleprompter, production switcher and audio board; all associated audio and lighting equipment; 1/2 inch, 3/4 inch and 2 inch videotape recorders. There is also an audio preparation room with in-socket and cartridge machines. Most of the nearby classrooms are wired for television so that classes can be shown in history and criticism classes, and an area is set aside where students may study videotapes on their own.

Though 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. There is a "pool" of equipment available for check-out to students in each course which includes: six Bolex Macromini Super-8, six Bell and Howell, one Bolex H-17, one Arriflex and four Arriflex 16mm cameras; five Sony cassette, two Sony reel-to-reels, and three Nagra battery-operated audio recorders; and two Lovell lighting kits. Each course has its own editing area; there are eight super-8, and fifteen 16mm stations (two are equipped for sound editing). There are four Moviola editing machines, two of which are "floaters," and a sync-telecine interlock viewing area.

The University maintains a complete motion picture laboratory and all 16mm processing and printing is done on campus. There is a synchophone program-insert three-channel mixing facility. A Moviola 'library' reader is available for students who may wish to study a particular film in detail.

Courses

399:025 Mass Media and Mass Society
399:035 Introduction to Broadcasting and Film Production
399:040 Erosion of the Traditional Arts in Mass Society
399:050 Media and Mass Society
399:060 Mass Media and Mass Society
399:070 Mass Media and Mass Society
399:080 Mass Media and Mass Society
399:090 Mass Media and Mass Society
399:100 Mass Media and Mass Society
399:110 Mass Media and Mass Society
399:120 Mass Media and Mass Society
399:130 Mass Media and Mass Society
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399:970 Mass Media and Mass Society
399:980 Mass Media and Mass Society
399:990 Mass Media and Mass Society
399:995 Mass Media and Mass Society
A study of broadcast systems in various countries, their history and development, with particular emphasis on the regulatory, technical, and social aspects of broadcasting. The term "broadcasting" refers to the distribution of audiovisual content through various media, including radio and television. This study covers the technical, legal, and social aspects of broadcasting, including the impact of technology on society, the role of governments and private companies in the broadcasting industry, and the influence of broadcasting on culture and politics.
Drastic Art

Director: Lewis Guff
Degree offered: B.A., M.A., M.F.A., Ph.D.

Bachelor of Arts

The requirements are:
11:51-52 Drama in Western Culture (to satisfy the historical-cultural core requirement);
A minimum of 32 semester hours of credit within the Department, or a combination of courses from this department and equivalent courses from other colleges or universities;
A minimum of 12 semester hours of credit for production/performance courses in the Department (or equivalent department) and
A minimum of 12 semester hours of credit for nonproduction/performance courses in the Department (or equivalent department).

Students with sufficient talent and dedication may specialize in one or more production areas. Admission to second and third years of the production sequences is limited to students of superior ability. Work in all production and content areas is desirable for professional and personal advancement. Studies in history, literature, philosophy, social studies, art, music, dance and religion are encouraged. There is particular emphasis on choosing courses which will fulfill department graduate entrance requirements for those expecting to attend advanced degrees. Students expecting to apply for 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 level and for those who want to earn an advanced degree before proceeding to the doctorate. The program consists of a combination of prescribed and elective courses covering the general areas of dramatic literature, criticism, history, and production. A thesis or graduate seminar in history, criticism, theory or drama is required.

Master of Fine Arts

Students 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 68 semester hours are required, and students must repay for admission each year. Substantial creative work of high quality is expected of all candidates.

Admission is based upon audition or portfolio of relevant artistic work, in addition to undergraduate record, other records of artistic accomplishment and letters of recommendation.

Doctor of Philosophy

The Ph.D. program in theatre is designed to emphasize research and creative scholarship rather than general education or production. The emphasis in this program is on theatre history.

Facilities

The division's commitment to an extensive and varied production program is reflected in its use of four quite different theatres. Studio II is a large, flexible space in which class projects, highly experimental productions and readers' theatre productions are performed with limited scenery before small audiences. Studio I, with its seventeen lights and sound control, offers directors and designers an opportunity to stage its 250 seats. Studio II, which is based on the nuclear professional touring house which perform in Iowa City, and boasts the latest and most sophisticated stage machinery available.

To support its continuous production schedule and to provide its students with an appropriate range of experiences, the division maintains several shops for the building, maintenance and storage of its 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 resistance lighting control and the two-channel sound systems of Studio Theses to the fully computerized lighting controls and the five-channel sound system used in the Fletcher Auditorium.

Courses

For Undergraduates

367:9 Shakespeare
Same as English 6:9
367:12 Shakespeare
Same as English 9:12
367:51 Drama in Western Culture
Same as core course 11:51
367:52 Drama in Western Culture
Same as core course 11:52
367:55 Modern Drama
Same as core course 11:55
367:58 Selected Plays
Same as English 5:8
367:65 Southern Accent
Same as School of Law 10:65 and German 12:65
367:69 Theatre Workshop
Same as core course 11:69

For Undergraduates and Graduates

317:100 American Film and American Culture

317:101 Acting 1

Readings, improvisation and some study developing actor's psychological techniques.
exercises to enhance concentration of attention, observation, imagination and memory concentration.

SET:102 Acting II 2 a.h.
Readings and exercises focusing upon some technique of characterization and communication. Prerequisite: SET:101.

SET:103 Stage Movement 2 a.h.
Basic movement training for actor; development of awareness and control of body in movement and with physical surroundings.

SET:104 Acting Workshop 2-3 a.h.
Assigned readings and class work. Prerequisite: SET:102 and audition.

SET:105 Voice for the Actor 1-2 a.h.
Voice training for the stage. Open only to students enrolled in SET:102.

SET:106 Movement for the Actor 1-2 a.h.
Movement training for the stage. Open only to students enrolled in SET:102.

SET:107 Period Styles in Movement 2 a.h.
Classical period to 18th century. Emphasis is on pantomime and choreographic techniques.

SET:108 Rendering 1 a.h.
Explores stage techniques in models, drawings, historical costume presentation and perspective for the stage.

SET:109 Rendering II 1 a.h.
Analyzes techniques and methods for drawing historical costume and perspective for the stage.

SET:110 Introduction to Theatrical Design 2 a.h.
Prerequisite: SET:111. Directs the student toward the study of elements of design: light, color, layout, and costuming. Prerequisite: SET:113.

SET:111 Production Design I 2-3 a.h.
Projects in scenic design. Elements of design and planning: light, color, layout, and costuming. Prerequisite: SET:111.

SET:112 Production Design II 2-3 a.h.
Continuation of SET:111. Directs the student toward the study of elements of design: light, color, layout, and costuming. Prerequisite: SET:113.

SET:114 Studio for Theatrical Design 2-3 a.h.
Individual assignments in design ability for various areas of design: light, color, layout, and costuming. Prerequisite: SET:113 and consent of admissions committee. Prerequisite: SET:113.

SET:116 Dancing of the Body 3 a.h.
Drifting techniques and conventions for dancers and technicians. Prerequisite: SET:116.

SET:118 Theatre Management I 3-4 a.h.
Equipment materials and procedures for preparation of theatrical scenery.

SET:120 Stagecraft II 3 a.h.
Continuation of SET:118.

SET:121 Lighting and Sound 3-4 a.h.
Prerequisite: SET:118. Recommendations for courses in electrical engineering are strongly recommended.

SET:123 Environmental Design I 3 a.h.
Prerequisite: permission of instructor. Literature of design as it is practiced in the theatre.

SET:124 Intermedia 3 a.h.
Prerequisite: permission of instructor. Same as Art 123; Music 23.33.

SET:125 Introduction to Area Management 3 a.h.
Debate and organization of production design.

SET:126 Design and Production of Stage Makeup 3 a.h.
Basic elements of scenery technology.

SET:127 Scene Painting 3-4 a.h.
Painting scenery, costumes, set elements for the stage and screen. Prerequisite: consent of instructor.

SET:128 Advanced Scene Painting 3 a.h.
Advanced scenic techniques for the stage and screen. Prerequisite: consent of instructor.

SET:129 Properties and Special Effects 3-4 a.h.
Design, construction, and handling of theatrical properties; development and control of special effects.

SET:131 Stage Costumes: Patrons 3 a.h.
Selection and use of fabrics, techniques, equipment, and procedure for making various types of costumes.

SET:132 Stage Costumes: Drafting and Draping 3 a.h.
Pattern-making for stage costumes with particular reference to period dress.
Concentrations in crime and movement as two components of a performer's skill include: concentration exercise, identity, blunder, character, clown, tumbling, juggling, techni, music, modeling, etc.; emphasis on improvisation and development of personal group name identity.

36/169 Greek Drama in Translation
Same as Greek 14/158 and School of Letters 108/108.

36/170 Roman Drama in Translation
Same as Latin 10/15, School of Letters 108/108.

36/171 Medieval Drama
Secular and religious drama of Europe from 10th century to close of mediæval period.

36/172 Restoration Drama
Same as English I/166.

36/173 Shakespeare's English Drama of the 19th Century
Same as English I/167.

36/174 Continental Drama, 1550-1750
Restoration and drama of the 18th century. Same as English 167.

36/175 Continental Drama, 1750 to 1820
Drama in Italy, France, and Germany from the death of Racine to the close of the Romantic movement.

36/177 Subsequent Modern Dramatists I
Same as English I/168.

36/178 Subsequent Modern Dramatists II
Same as English I/169.

36/179 Modern American Drama
Same as English I/170.

36/180 Contemporary Drama
Same as English I/171.

36/181 Modern Poetry
Writing satire of minor dramatic scripts through reading, discussion and rehearsal.

36/182 Poets of the 20th Century
Same as English I/172.

36/184 Modern Drama
Reading and analysis of modern drama literature. Same as English I/173.

36/185 American Theatre History
Organization and operation of the American theatre from its beginning (c. 1750) to complete to 1820; comparatively complete to 1820.

36/186 Afro-American Drama
Same as American Literature 14/126, English I/154.

36/187 Strategies in the Drama
Play analysis for basic theatre concepts on current trends in drama.

36/188 Techniques of Modern Theatre Practice
Stage theory and practice from the sources to modern techniques.

36/189 M.F.A. Production
Appropriate assignments in all aspects of production of play.

36/191 M.F.A. Workshop
Independent artistic work and writing.

36/192 Shakespearean Poetry
Same as English I/152.

36/193 Shakespearean Plays
Same as English I/153.

36/194 Shakespearean Drama
Same as English I/154.

36/195 Playwriting
Same as English I/155.

36/196 Dramatic Form and Analysis
Introduction to the student will the study, analysis and production of plays. Same as English I/156.

36/197 Dramatic Literature; Dramatic Literature Seminar
Dramatic literature and technique in dealing with the management of performing and community arts activities.

36/198 Laboratory of the Performing Arts
The performing arts and the public relations of copyright, collaborative rights, license of speech and other related topics.

36/199 History of Civilizations: Plato to the Renaissance
Same as English I/301, Comparative Literature 48/281.

36/200 History of Civilizations: Caxton to the Czar
Same as English I/302, Comparative Literature 44/281.

36/201 Seminar: American Theatre History
Same as English I/303.

36/202 Seminar: Theatre History
Same as English I/304.

36/203 Seminar: Dramatic Literature
Same as English I/305.

36/205-208 Seminar: Dramatic and Rhetorical Criticism
Same as English I/306, 307, 308, 309.

Speech Pathology and Audiology
Department chairman: Kenneth L. Allert

Assistant professors: associate professor Jesse D. Smith; clinical assistant professors Carl T. Berto, Herbert W. Byrd, Ann A. V. Desmet; clinical associates Melanie N. Adair, Ann M. Boggs, Mary Frances Edwards, Patricia D. Kemer, Mary W. Lowden, John L. McMillan, William Murphy, Janet Schwartz, Albert P. Sherrill,udy K. Williams

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

The courses and degree programs of the Department of Speech Pathology and Audiology are planned to meet the needs of students seeking to prepare themselves for a wide variety of career opportunities. These include clinical service, college and university teaching, and research concerned with speech, language, hearing processes and disorders. The offerings also include courses for students with vocational and professional goals in other fields, such as psychology, education, speech and dramatic arts, dentistry and medicine, whose preparation may be enriched by the study of speech and hearing processes and their disorders. Holders of advanced degrees in this field provide clinical services for people with speech, hearing or language problems in hospitals, community clinics, rehabilitation facilities and elementary and secondary schools; teach in colleges and universities; and/or conduct research in laboratories concerned with communication processes and disorders.

All professional programs of the Department leading to the M.A. degree are accredited by the Education and Training Board of the American Board of Examiners in Speech Pathology and Audiology.

Undergraduate Curricula
Since the master's degree or its equivalent is the minimum level of preparation for persons seeking professional careers in this field, the undergraduate curricula leading to a B.S. or B.A. degree in speech and hearing science do not qualify an individual to work professionally in this field but have as a primary purpose the preparation for graduate work. Hence, the undergraduate program emphasizes the normal processes of speech, hearing and language. Thus, undergraduate programs also may be taken by persons who want a degree in the College of Liberal Arts but who do not desire a career in this field.

Students may qualify for either the B.S. degree or the B.A. degree with a major in speech and hearing science by completing, in addition to the general requirements prescribed by the College of Liberal Arts, the undergraduate departmental program given below:

Required Departmental Courses
3:15 Introduction to Speech and Hearing Processes and Disorders 3 s.h.

3:20 Phonetics of American English 3 s.h.

10:110 Articulatory and Acoustic Phonetics 3 s.h.

3:110 Anatomy of the Speech and Hearing Mechanism 3 s.h.

11:11 Fundamentals of Speech Science 3 s.h.

Courses and preceding prerequisites.

Speech Pathology and Audiology
Introduction to Hearing Science: 3 s.h.
Language Development: 3 s.h.
Introduction to Psycholinguistics: 3 s.h.
Introduction to Linguistics: 3 s.h.

Required Courses in Related Areas:

Physics of Sound and Music: 3 s.h.
Introduction to Statistical Methods: 3 s.h.
Elementary Psychology: 4 s.h.
General Psychology: 4 s.h.

A minimum of nine semester hours must be earned in one course from Group 1 and one course from Group 2, below, and one additional course selected from fields of psychology, anthropology, or sociology.

Group 1:
31:110 Learning and Motivation in Children: 3 s.h.
31:111 Child Development: 3 s.h.

Group 2:
31:113 Psychology of Adjustment: 3 s.h.
31:105 Personality: 3 s.h.
31:163 Abnormal Psychology: 3 s.h.

Other Requirements

Students majoring in speech and hearing science must also complete or have the equivalent of college algebra and trigonometry, college physics dealing with light and sound, and a college course in the biological sciences.

Honors Program

The senior-year program leading to the B.S. degree with Honors in speech pathology and audiology is open to students who at the beginning of the senior year have completed at least 10 semester hours of coursework that can be counted toward a major in the Department, and have earned at least a 3.0 grade-point average on all major courses and all work at the University. For graduation with Honors, the student must complete two semesters of study in residence after entering the senior year Honors program; maintain a minimum grade-point average of 3.0 overall, for all courses in the major and in the required six semester hours of departmental Honors courses for seniors (Honors Seminar and Honors Thesis); and be recommended for graduation with Honors by the Honors thesis advisor and the departmental Honors advisor. Students who are eligible and who are not already classified as Honors students should confer with the departmental Honors advisor before the beginning of the senior year. At any time during undergraduate study, students who have earned a minimum grade-point average of 3.0 and have met the enrollment as Honors students may apply for Honors classification in the College of Liberal Arts and in the Department by recommendation of the Departmental Honors advisor.

Advanced Degree

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 sciences, development of real communication and psychology of human behavior essentially equivalent to an undergraduate major in this field.

Requiring M.A. degree candidates are required to take preliminary comprehensive examinations covering coursework in speech and hearing that is considered prerequisite to graduate study. The results of these examinations are 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, or E) and elective enrollments. 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 for a master's degree in this department. Candidates for the professional M.A. degree are not required to present a thesis. However, students demonstrating research aptitude and interest are encouraged to do so. All candidates for the professional M.A. degree without thesis are required to take final written comprehensive examinations. The professional M.A. programs in both speech pathology and audiology are accredited by the American Board of Examiners of Speech Pathology and Audiology.

Requirements for the professional M.A. degree:

A. All Majors:

*3:116 Neural Processes of Speech and Language: 3 s.h.
*3:150 Foundations of Clinical Management: 3 s.h.
*3:183 Articulation Disorders: 3 s.h.
*3:185 Hearing Loss and Audiology: 4 s.h.
3:214 Children's Language Disorders: 3 s.h.
3:244 Rehabilitation Audiology: 3 s.h.
7C:599 Counseling for Related Professions: 2-3 s.h.
Two advanced seminars or thesis: 4 s.h.

*Equivalent undergraduate course will be accepted as meeting requirements.
Additional semester hours of practicum registration sufficient to meet supervised, direct clinical experience requirements for Certificate of Clinical Competence of the American Speech and Hearing Association and to provide broad supervised practicum experience.

B. Speech Pathology, General Clinical Emphasis

Courses listed under A and:

3:183 Slurring 3 s.h.
3:212 Voice Disorders 2 s.h.
3:235 Neuropathologies of Speech and Language 3 s.h.
3:237 Cleft Palate 2 s.h.

Practicum, research and elective courses to bring total to at least 38 semester hours.

C. Speech Pathology Major, Emphasis on Clinical Work in Elementary and Secondary Schools

Courses listed under A and B, and:

7E:104 Remedial Methods in Speech and Hearing 2 s.h.
7E:192 Laboratory Practice in Elementary School 5 s.h.

Practicum, research and elective courses to bring total to at least 38 semester hours.

D. Audiology Major, General Clinical Emphasis

Courses listed under A and:

3:121 Fundamentals of Laboratory Instrumentation 3 s.h.
3:121 Audiology Instrumentation Laboratory 1 s.h.
3:140 Manual Communication I 1 s.h.
3:240 Introduction to Diagnostic Audiology 4 s.h.
3:261 Advanced Audiology 4 s.h.
3:345 Audiologic Procedures for Special Populations 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 D, and:

7E:104 Remedial Methods in Speech and Hearing 2 s.h.
7E:192 Laboratory Practice in Elementary Schools 3-5 s.h.

Practicum, research and elective courses to bring total to at least 38 semester hours.

Students preparing for clinical positions in public schools must meet the certification requirements of the states in which they plan to work. Completion of the following courses, in addition to those previously listed under C or E 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 is individually planned in consultation with the student's advisor. It usually includes a substantial portion of the courses previously listed for the professional M.A. program. Certain of the courses, however, may be omitted, deferred or regrouped 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 special emphasis through suitable selection of advanced seminars and research areas. Most students will find that their special interests lie in one or more of the four listed areas. The establishment of prescribed programs for these areas is not intended to circumscribe the graduate curriculum of the Ph.D. candidate who has specified goals or interests which are not adequately met by these programs. Individual programs designed to meet special interests and goals are encouraged, provided only that the student's purpose is clearly defined and that he or she presents an adequate plan of study for their accomplishment.

Courses beyond those included in the departmental listings are drawn mainly from the areas of physics, engineering, mathematics, statistics, psychology, neurology, anatomy and psychology.

The nature of the Ph.D. comprehensive examination is determined for each student by a five-member comprehensive examination 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 effectively in a research and/or clinical environment. The examination must include both written and oral portions. Candidates whose earlier 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 appropriate for a master's thesis. It is expected that the comprehensive 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 successfully complete a dissertation based on original research in the area of specialization.
Recommended Courses

A. All areas of specialization
Courses, 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 Phonetics
3:251 General Experimental Phonetics Laboratory
3:390 Research Speech Pathology
3:591 Research Audiology
or
3:592 Research Experimental Phonetics
Statistics beyond introductory course
Courses in computer science
Courses in psychology (physiological, learning, motivation, personality)

B. Speech pathology
Courses listed under A and:
Seminars in areas of interest
Clinical practicums

C. Audiology
Courses listed under A and:
3:254 Psychoacoustics
3:255 Psychoacoustics Laboratory
3:256 Physiology of Hearing
Seminars in areas of interest
Clinical practicums

D. Speech and language science
Courses listed under A and:
3:254 Psychoacoustics
3:255 Psychoacoustics Laboratory
Seminars in areas of interest
Courses in linguistics and psycholinguistics
Courses in biological and physical sciences and mathematics

E. Hearing science
Courses listed under A and:
3:254 Psychoacoustics
3:255 Psychoacoustics Laboratory
3:256 Physiology of Hearing

31:224 Sensory Processes
Seminars in areas of interest
Courses in biological and physical sciences and mathematics

Students following programs in speech and language science or hearing science are normally expected to register for research credit during each semester of residence.

Training Assignments
All students in advanced degree programs are required to complete part-time professional training assignments of 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 in 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 12 semester hours for a semester and 6 for a summer session.

Admissions and Appointments
The Department of Speech Pathology and Audiology has requirements for admission and graduate appointment which supplement those specified by the Graduate College. Only a brief summary of these requirements is presented below. For more detailed information, contact the Department chairman.

Special Admission Requirements
Scores from the aptitude tests of the Graduate Record Examination generally are required. Applicants may be admitted without such scores only in special cases. All applicants must have a completed "Information Form" with the Department. This form can be obtained from the Department chairman.

Admission into the master's program is based on consideration of an applicant's credentials in relation to those of other applicants for that term. Thus a minimum grade-point average cannot be specifically stated. As a general guideline, however, experience indicates that few students with undergraduate averages under 3.0 (B) will be admitted into the M.A. program. This does not imply that all applicants with a G.P.A. greater than 3.0 will be admitted.
Admission Deadlines and Processing

Applicants to M.A. program:
Completed application to begin a program in summer session or fall semester must be received no later than the preceding February 1. Late applications will be considered only in special situations. Applications to begin study in the spring semester will be considered only under special circumstances and only if they are received no later than the preceding November 1. In most instances, applicants for summer session or fall semester will be notified of action on their admission between March 1 and April 1. Applicants for spring semester will be notified as soon as possible. In some cases, an applicant may be admitted only on the condition that he begins his program in a different term than the one for which he has applied.

Applicants to Ph.D. program:
Completed applications must be received at least two months prior to the beginning of the term for which application is made: approximately April 1 for fall semester, July 1 for spring semester and November 1 for summer semester. However, if an applicant wishes to be considered for graduate appointment, the admission application must be filed by the deadline for appointment applications specified below. Applicants will usually be notified of action on their admission within six weeks after their applications are complete.

Applications for Graduate Appointments
The following information applies to all financial appointments (assistantships, fellowships, traineeships) administered by the Department:

Graduate appointments usually begin only in fall semester. Students beginning study in second semester or summer session are considered for appointments for the following fall semester.

Scores on the aptitude tests of the Graduate Record Examination are routinely required for consideration for financial assistance.

Appointment applications must be received by February 1 to insure consideration for an appointment beginning the following fall semester.

Initial appointment offers are generally made between March 15 and April 1; however, offers continue to be made after this time.

Clinical Facilities
The clinical training program derives great benefit from the fact that Iowa City is the health center of the state and that these health service facilities are located so that they may be fully utilized in the clinical training of students in speech pathology and audiology. The University of Iowa Affiliated Speech and Hearing 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; Division of Speech and Hearing, Department of Otolaryngology and Maxillofacial Surgery; Speech and Hearing Services, University Hospital School; Speech and Hearing Services, Pediatric- State Services for Crippled Children; Audiology and Speech Pathology, Veterans Administration Hospital.

The University of Iowa Speech and Hearing Clinic serves the University and the general public. Included in its services are outpatient evaluations and rehabilitation programs for speech, hearing and language problems, and a six-week summer residential program for children. These clinical programs are planned for the training of students through supervised clinical experience with a wide variety of speech, hearing and language disorders. This training is enhanced by the use of the modern facilities of the Wendell Johnson Speech and Hearing Center, which include audiometric testing suite, 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 supervised clinical practice with elementary school children by arrangement with the Great Wood Area Education Agency, in supervised clinical practice in speech and hearing services provided by the Department of Otolaryngology and Maxillofacial Surgery, Department of Pediatrics, Iowa State Services for Crippled Children, University Hospital School, Iowa City, Veterans Administration Hospital, and St. Luke’s Methodist Hospital, Cedar Rapids.

Public and private departments and programs in addition to those mentioned above often contribute to the cooperative professional training, research and service programs.

Research Facilities
Research facilities in the Wendell Johnson Speech and Hearing Center include a number of fully equipped laboratories for the study of the basic processes of speech, hearing and language, and disorders of these processes. Included are laboratories and equipment for acoustic, physiologic and perceptual studies of speech and for audiologic, psychoacoustic and neurophysiologic studies of hearing. Well-equipped mechanical and electronic shops and trained technical personnel are available for assistance in research instrumentation.

Cooperation of various departments of the University Hospitals and the College of Dentistry makes it possible to utilize additional facilities for the investigation of a wide variety of research problems. Research opportunities are materially broadened by the active participation and cooperation of specialists from various fields, including psychology, child development, education, engineering and medicine.

Courses

3110 Introduction to Speech and Hearing Processes and Disorders
3 credits
Speech, language and auditory behavior as field of scientific study; description of major types of speech, hearing and language disorders.

3200 Phonetics of American English
3 credits

399 Honors Seminar
3 credits
Readings, reports, preparation of papers and discussion of research papers in speech pathology and audiology. Open only to honors students.

388 Honors Thesis
3 credits
Independent study and research project or research problem in speech pathology and audiology. Open only to honors students.

5110 Anatomy of Speech and Hearing Mechanisms
3 credits
Anatomy of peripheral and central structures of speech and hearing mechanisms, sections in general anatomy included.

5112 Physiology of Speech and Hearing
3 credits
Phonetics, acoustic, perceptual characterization of speech; principles and methods for the laboratory study of speech. Pre-requisites: Phys 3110 or Phy 3110 and Anatomy 20, 115, or consent of instructor.

5120 Introduction to Hearing Science
3 credits
Normal auditory process; review of anatomy, anatomy, physiology of the auditory
Statistics
See "Mathematical Science."

Urban and Regional Planning
Program chairman: James A. Spady
Program coordinators: James Haric, associate professor Douglas Law, associate professor James Spady; instructor Dennis Williams; visiting associate professor David Williams; visiting lecturer professor John Elkin; visiting research professor David Koff, Paul Cluney, John Hyren
Degrees offered: M.S., Ph.D., B.S.

Planning is a diverse field, requiring and allowing a broad range of talents and interests. Planning has been called one of the few fields that tap enough intellectual and personal talent to satisfy the so-called "many-talented person." Yet within planning there are areas of specialization for those having highly focused talents.

In recent years, the urban field of policy development has received formal recognition in both government offices and in academic programs. The Iowa planning program maintains a firm policy analysis and policy development focus in its approach to planning. Graduates of the program take professional positions in both traditional planning and in policy development.

Planning and policy development find their historical focus in the study of urban and regional systems and trends, and in professional activities guiding governmental interventions for betterment of social conditions. This historic base of planning activities has now broadened to include social decisions that transcend a given city or region with social or regional focus, such as health policy and planning, environmental policy and planning, or criminal justice systems policy and planning. In addition, within the strict urban focus, the field now encompasses the planning of the urban management system itself. These newer developments of planning and policy development nicely supplement the more traditional concerns with urban and regional development, transportation and land use, so as to provide a wide range of opportunities for professional service to both self and society.

The emphasis at Iowa is on "social planning," as distinct from "physical planning." The Department enjoys fully recognized professional status by the American Institute of Planners, and meets Institute standards for professional education. This recognition affords some appreciable advantage to degree holders when seeking professional planning positions and affiliations.

Additionally, the 1974 study by the Association of the Collegiate Schools of Planning, an association of the 66 schools recognized by the American Institute of Planners, placed the Iowa program in the second four Association memberships in social planning. This rating resulted from a poll of both planning academics and practicing planners.

At Iowa, "social planning" is viewed in its broad context, as an approach to all planning specialties, not as a specialty itself. Our goal is to combine the rigorous concepts and training usually associated with highly technical or professional fields, with the human welfare usually associated with more service-oriented fields.

Our faculty and students are involved both in human settlements and social problems, and in applied social science methodologies adapted for professional interventions. In addition, our curriculum is directed both to a goal orientation emphasizing human concern and the need for continual societal change and development, and a means orientation emphasizing the acquisition of significant professional skills sufficient to help achieve that goal.

Curriculum
The curriculum in planning and policy development comprises a 53-semester-hour, four-term program encompassing two academic years. The general philosophy underlying the curriculum is that planning is policy officials, and must understand urban government and urban society, and must also possess a wide range of empirical and analytic skills necessary to assess urban problems and propose interventions to alleviate those problems. The curriculum consists of five coordinated parts.

The first part deals with urban structure and dynamics. It teaches the student the natural patterns of urban growth, development and change. Required courses are 202:201 Urban Development I and 202:313 Urban Economics Analysis.

The second curriculum part deals with techniques of planning analysis. It teaches the student the analytic, empirical and judgmental methods employed by planners. Required courses are 202:216 Introduction to Analytic Methods, 202:220 Intermediate Analytic Methods, 202:240 Economics for Policy Analysis and
102:206 Planning Method

The third curricular part deals with methods for intervention into natural urban systems to attain the more desirable conditions defined by the various analytic techniques. Required courses are 102:207 History and Theory of Planning, 102:239 Collective Decision Making, 102:289 Urban Law and Legislation, 102:214 Organizational Resource Allocations and 102:303 Laboratory in Program Design and Evaluation.

A workshop sequence comprises the fourth part of the curriculum. The workshop sequence provides practice in professional analysis and synthesis, in the continual context of professional report writing on urban problems. The workshop sequence parallels and complements the academic training of the first three parts of the curriculum with heavily applied tasks intended to develop judgment about professional situations. Required courses are 102:302 Workshop in Information Systems and Presentation, parallelizing and applying Urban Structure and Dynamics Sequence; 102:301 Laboratory in Issue Analysis, parallelizing and applying Techniques of Planning Analysis Sequence; and 102:303 Laboratory in Program Design and Evaluation, parallelizing and applying Intervention Methods Sequence. The required core of the curriculum, consisting of the four parts just listed, is an average of 33 semester hours, leaving a minimum of 20 semester hours as electives. In practice, however, every course except the workshops and 102:206 Planning Methods can be waived by the program faculty upon a showing that the student has already mastered equivalent material before entering the program. Many students have up to three courses waived under this rule. Each waived course allows an additional elective for the well-prepared student.

The program also allows substitution of more advanced courses for those listed in the core. For example, a student with an undergraduate major in economics might prefer to substitute an economics department graduate course in public finance for the planning program's otherwise required 102:214 Organizational Resource Allocations.

The fifth part of the curriculum is the sectoral "major," consisting of nine semester hours chosen from courses offered in various departments and schools of the University, and including the planning program itself. The sectoral major can be selected from eight planning areas, or it can be student-designed as an ad hoc major. The currently listed eight majors are: urban development, regional development, health policy and planning, environmental policy and planning, community participation, criminal justice policy and planning, transportation policy and planning, and urban management and administration.

A student may substitute two "minors" of six semester hours each for the major, if that better serves the student's professional objectives.

The philosophy underlying the majoring system is that while breadth of background (acquired in the first four parts) is necessary to professional competence in any field of planning, specific subjects in no area kind of a narrower kind is very useful for purposes of the initial professional position and the initial professional direction of personal development. No fixed number of hours is required, but the student may choose to write one for six semester hours of credit toward a major or minor.

A comprehensive examination is administered at the close of the fourth quarter. Two semester hours of credit are offered for a satisfactory score. The examination takes place at the student's discretion, if the student's thesis is an essay discussing and evaluating the internship experience.

Experimental Learning

Faculty and students in the planning and policy development program flow bring to cover one a wide range of experiences, both professional and personal. Fields represented by the training of the program's faculty include architecture, sociology, political science, law, operations research, geography, and economics. Faculty professional experience includes practicing architect, community organizer, and urban relations specialist, special assistant to state governor, chief regional planner, state planning director, RAND consultant, legislative assistant to the N.Y.C. council, United Nations urban development consultant, counsel to a state armed assistance majority leader, urban renewal director, and city manager.

The student contribution to the experiential aspect of the learning community is equally diverse. For example, the 31 students entering in 1973-74 included six who had majored in economics, four in political science, three in anthropology, three in architecture, two each in sociology, geography, and general studies, and one each in urban development, criminology, planning, social studies, English, biology, history, classics, and philosophy.

Admissions Standards

The 31 students in the 1973-74 entering class aggregated a mean undergraduate grade-point average of 3.28, and a mean (combined) set of GRE aptitude scores of 1274. A student having undergraduate GPA below 3.0 cannot expect admission unless either the undergraduate institution attended was a highly distinguished one, or the combined GRE aptitude scores are at least 1300, or there is compelling evidence of distinct leadership qualities of a kind relevant to public service.

Also, a student compiling combined GRE aptitude scores below 1200 cannot expect admission unless his or her undergraduate GPA was substantially above 3.0, or there is compelling evidence of distinct leadership qualities of a kind relevant to public service. In all cases, whether or not the foregoing minimum standards are met, admission is competitive, so that possession of minimum qualifications does not guarantee admission.

Joint Programs

Law and Planning

The planning program and the College of Law cooperate in administering a four-year program which satisfies the degree requirements leading to an M.A. or M.S. in planning and a J.D. in law. This is a reduction of one academic year from the total requirements of the two programs taken separately. Separate admission to both academic units is required.

Preventive Medicine and Environmental Health

The planning program and the Department of Preventive Medicine and Environmental Health, in the College of Medicine, cooperate in administering a program for health policy planners leading to the M.A. or M.S. in planning and the Ph.D. in preventive medicine. The total number of course hours is reduced to three years of coursework by virtue of the joint agreement. A thesis and general examination is additionally required for completion of the Ph.D. Separate admission to both academic units is required.
Urban Transportation

The urban transportation research and training program is adminis-
tered by the Center for Urban Transportation Studies of the
Institute of Urban and Regional Research. This Institute, and its
Transportation Center, is a separately organized unit at The
University of Iowa. Both the Director of the Institute and the
Director of the Transportation Center are members of the planning
faculty. The Center provides transportation certification to stu-
dents in academic graduate departments at Iowa who satisfy a
prescribed set of interdepartmental transportation courses. Plann-
ing students interested in transportation find this certificate pro-
cram enhances the value of their departmental major in transpor-
tation. A separate admissions process is maintained for joint
candidacy. For particulars, see the Urban Transportation section
of the Catalog.

Social Work

A concurrent studies program is offered between the planning
program and the Iowa School of Social Work, leading to the M.A.
in planning and the M.S.W. in social work. Twelve semester
hours in planning are accepted toward the M.S.W., and 12 semes-
ter hours in social work are accepted toward the M.A. in
planning. This reduces the required units to 30 semester hours in
social work and 41 semester hours in planning. Separate admis-
sions are required. Formal application is made to the unit in which
the first semester's registration is desired.

Other Joint Programs

The planning faculty welcomes joint programs with related units
on campus, in order to assist the planning students to develop a specializa-
tion within the general framework of planning itself. Concur-
ten courses plan toward joint degrees with other units on campus
that provide a proper relationship to the analysis and/or management
of urban systems and problems are encouraged.

Special Facilities

The program maintains its own teaching and periodicals library.
 Adequate minor research facilities are included, sufficient for
student research into professional materials. Each student is
provided with a desk and other devices of a professional setting.

Courses

102/103 Introduction to Planning and Policy Development 3 s.h.

102/104 Urban Politics 3 s.h.

102/105 Social Foundations of Urban Planning 3 s.h.

102/106 Housing Analysis 3 s.h.

102/107 Environmental Law and Planning 3 s.h.

103/108 Environmental Planning and Law 3 s.h.

104/109 Transportation Planning 3 s.h.

105/110 Land Use Planning and Development 3 s.h.

106/111 Urban Economics 3 s.h.

107/112 Readings in Planning 3 s.h.

108/201 Urban Development I 3 s.h.

109/202 Urban Development II 3 s.h.

110/203 Urban Development III 3 s.h.

111/204 Urban Development IV 3 s.h.

112/205 Urban Development V 3 s.h.

113/206 Urban Development VI 3 s.h.

114/207 Urban Development VII 3 s.h.

115/208 Urban Development VIII 3 s.h.

116/209 Urban Development IX 3 s.h.

117/210 Urban Development X 3 s.h.

118/211 Urban Development XI 3 s.h.

119/212 Urban Development XII 3 s.h.

120/213 Urban Development XIII 3 s.h.

121/214 Urban Development XIV 3 s.h.

122/215 Urban Development XV 3 s.h.

123/216 Urban Development XVI 3 s.h.

124/217 Urban Development XVII 3 s.h.

125/218 Urban Development XVIII 3 s.h.

126/219 Urban Development XIX 3 s.h.

127/220 Urban Development XX 3 s.h.

128/221 Urban Development XXI 3 s.h.

129/222 Urban Development XXII 3 s.h.

130/223 Urban Development XXIII 3 s.h.

131/224 Urban Development XXIV 3 s.h.

132/225 Urban Development XXV 3 s.h.

133/226 Urban Development XXVI 3 s.h.

134/227 Urban Development XXVII 3 s.h.

135/228 Urban Development XXVIII 3 s.h.

136/229 Urban Development XXIX 3 s.h.

137/230 Urban Development XXX 3 s.h.

138/231 Urban Development XXXI 3 s.h.

139/232 Urban Development XXXII 3 s.h.

140/233 Urban Development XXXIII 3 s.h.

141/234 Urban Development XXXIV 3 s.h.

142/235 Urban Development XXXV 3 s.h.

143/236 Urban Development XXXVI 3 s.h.

144/237 Urban Development XXXVII 3 s.h.

145/238 Urban Development XXXVIII 3 s.h.

146/239 Urban Development XXXIX 3 s.h.

147/240 Urban Development XL 3 s.h.

148/241 Urban Development XLI 3 s.h.

149/242 Urban Development XLII 3 s.h.

150/243 Urban Development XLIII 3 s.h.

151/244 Urban Development XLIV 3 s.h.

152/245 Urban Development XLV 3 s.h.

153/246 Urban Development XLVI 3 s.h.

154/247 Urban Development XLVII 3 s.h.

155/248 Urban Development XLVIII 3 s.h.

156/249 Urban Development XLIX 3 s.h.

157/250 Urban Development L 3 s.h.

158/251 Urban Development LI 3 s.h.

159/252 Urban Development LII 3 s.h.

160/253 Urban Development LIII 3 s.h.

161/254 Urban Development LIV 3 s.h.

162/255 Urban Development LV 3 s.h.

163/256 Urban Development LX 3 s.h.

164/257 Urban Development LXI 3 s.h.

165/258 Urban Development LXII 3 s.h.

166/259 Urban Development LXIII 3 s.h.

167/260 Urban Development LXIV 3 s.h.

168/261 Urban Development LXV 3 s.h.

169/262 Urban Development LXVI 3 s.h.

170/263 Urban Development LXVII 3 s.h.

171/264 Urban Development LXVIII 3 s.h.

172/265 Urban Development LXIX 3 s.h.

173/266 Urban Development LXX 3 s.h.

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183/276 Urban Development LXXX 3 s.h.

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187/280 Urban Development LXXXIV 3 s.h.

188/281 Urban Development LXXXV 3 s.h.

189/282 Urban Development LXXXVI 3 s.h.

190/283 Urban Development LXXXVII 3 s.h.

191/284 Urban Development LXXXVIII 3 s.h.

192/285 Urban Development LXXXIX 3 s.h.

193/286 Urban Development X 3 s.h.

194/287 Urban Development XI 3 s.h.

195/288 Urban Development XII 3 s.h.

196/289 Urban Development XIII 3 s.h.

197/290 Urban Development XIV 3 s.h.

198/291 Urban Development XV 3 s.h.

199/292 Urban Development XVI 3 s.h.

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201/294 Urban Development XVIII 3 s.h.

202/295 Urban Development XIX 3 s.h.

203/296 Urban Development XX 3 s.h.

204/297 Urban Development XXI 3 s.h.

205/298 Urban Development XXII 3 s.h.

206/299 Urban Development XXIII 3 s.h.

207/300 Urban Development XXIV 3 s.h.

208/301 Urban Development XXV 3 s.h.

209/302 Urban Development XXVI 3 s.h.

210/303 Urban Development XXVII 3 s.h.

211/304 Urban Development XXVIII 3 s.h.

212/305 Urban Development XXIX 3 s.h.

213/306 Urban Development XXX 3 s.h.

214/307 Urban Development XXXI 3 s.h.

215/308 Urban Development XXXII 3 s.h.

216/309 Urban Development XXXIII 3 s.h.

217/310 Urban Development XXXIV 3 s.h.

218/311 Urban Development XXXV 3 s.h.

219/312 Urban Development XXXVI 3 s.h.

220/313 Urban Development XXXVII 3 s.h.

221/314 Urban Development XXXVIII 3 s.h.
arrangements of their individual departments, programs and colleges. Students who are enrolled, or who expect to enroll in the following University disciplines, are invited to apply for admission to the Graduate Program in Urban Transportation. Business Administration, Economics, Geography, Law, Political Science, Psychology, Sociology, Systems Engineering, and Urban and Regional Planning.

Requirements

Two core courses and four optional courses make up the curriculum, with the core courses and the Transportation Program Seminar required of all students. The seminar is of a continuing nature, and students register for it for the entire duration of their participation in the Transportation program. This helps maintain interaction between students from the various disciplines, and assures the continuation of an interdisciplinary approach to transportation planning.

Each student must take two courses from the selected option stem and two from any of the other stems.

Required Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>102:111</td>
<td>Introduction to Urban Transportation</td>
</tr>
<tr>
<td>587:272</td>
<td>Urban Transportation Planning</td>
</tr>
<tr>
<td>102:311</td>
<td>Transportation Program Seminar</td>
</tr>
</tbody>
</table>

Options and Requirements

Transportation Policy Formulation and Analysis

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>102:260-261</td>
<td>Transportation Policy and Planning I-II</td>
</tr>
<tr>
<td>102:240</td>
<td>Economics for Policy Analysis</td>
</tr>
<tr>
<td>102:250</td>
<td>Seminar: Urban Transportation Issues</td>
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</tbody>
</table>

Transportation Systems Design and Evaluation

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>581:179</td>
<td>Traffic Systems Analysis</td>
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</table>

Analysis of Travel Demand and Behavior

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>102:211</td>
<td>Readings in Travel Demand Models</td>
</tr>
<tr>
<td>44:236</td>
<td>Travel Behavior in Urban Areas</td>
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</table>

Transit Management and Operations

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>*Public Transportation Planning and Operations</td>
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</tbody>
</table>

*Logistics of Public Transportation

*To be developed during 1977-78

Research

Problems of small urban systems and low density states are substantial in research projects. Through a combination of course work and research activities—surveys, analysis of local transit systems, design and monitoring of small demonstration projects, etc.—it is believed students will develop skills and receive a practice-oriented educational experience in areas such as travel behavior, transit systems design, transit finance, and impact evaluation. Urban and regional laboratories available for this learning process (Coralville, Iowa City, Cedar Rapids, Quad Cities and Johnson County) provide an attractive range of small urban and regional systems within which to study travel behavior and transit planning.

All students financially supported in the program participate in the transportation research of the Center; leisure is provided for students to develop their own research activities.

Student Support

 Fellowships, research assistantships, tuition scholarships and summer assistantships are awarded on a competitive basis with the level of financial support ranging from quarter-time research assistantships ($200. per month for the academic year) to half-time research assistantships ($400. per month). All out-of-state students receiving research assistantships are eligible for in-state tuition. Students receiving financial support during the academic year are eligible for half-time summer research assistantships, as funding permits; these assistantships are generally awarded for two months at $400 per month.

The financial support indicated above is not intended to span all potential sources available within the University, but only to indicate the typical levels of financial support within the Center for Urban Transportation Studies.

Admission

Application for admission to the Graduate Program in Urban Transportation is made by submitting a duplicate University application form, two letters of reference, and a brief statement relating the nature and extent of the applicant's interest in urban transportation.

Women's Studies

Chairperson: Marjorie K. McDowell

The Women's Studies Program offers a variety of undergraduate and graduate courses designed to explore the nature, status, image and achievement of women in social, historical, psychological, economic, political and artistic contexts. Faculty and students attempt to carry on this exploration through feminist perspectives. Women's Studies courses focus on material previously neglected by scholars and on material previously approached from a limited perspective.

No major is presently offered, but concentrations in Women's Studies at the M.A. and Ph.D. levels are available in many departments. In addition to courses listed in the regular course schedule, Women's Studies courses for University credit are offered by the Saturday and Evening Class Program and by Correspondence Study. Non-credit classes are taught at the Women's Resource and Action Center.

American Civilization

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>45:002</td>
<td>American Civilization I (American Women Writers)</td>
</tr>
<tr>
<td>45:002</td>
<td>American Civilization II (American Women's Autobiographies and Journals)</td>
</tr>
<tr>
<td>45:002</td>
<td>American Civilization II (Women in 19th Century Utopias)</td>
</tr>
<tr>
<td>45:002</td>
<td>American Civilization II (Women in U.S. Reform Movements)</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
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<td>------------</td>
<td>------------------------------------------------------------------------------</td>
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<tr>
<td>45:002</td>
<td>American Civilization II (Black Women Writers)</td>
</tr>
<tr>
<td>45:002</td>
<td>American Civilization II (American Family, New Alternatives)</td>
</tr>
<tr>
<td>45:011</td>
<td>Contemporary Black Experience (The Black Woman)</td>
</tr>
<tr>
<td>45:108</td>
<td>Introduction to Women's Studies; Sociology of Sex Roles</td>
</tr>
<tr>
<td>45:112</td>
<td>The Popular Image of Women in America</td>
</tr>
<tr>
<td>45:144</td>
<td>Changing Concepts of Women in Literature</td>
</tr>
<tr>
<td>45:145</td>
<td>Women in Literature (Representative British and American Women Writers)</td>
</tr>
<tr>
<td>45:203</td>
<td>Socialization and Self-Concept</td>
</tr>
<tr>
<td>113:156</td>
<td>Women's Roles: Cross-Cultural Perspective</td>
</tr>
<tr>
<td>11:190</td>
<td>Themes in Art History (Women Artists of the 20th Century)</td>
</tr>
<tr>
<td>10:3</td>
<td>Rhetoric (Women's Studies section)</td>
</tr>
<tr>
<td>10:43</td>
<td>Physical Education Skills (Self-Defense for Women)</td>
</tr>
<tr>
<td>7C:112</td>
<td>Human Sexuality</td>
</tr>
<tr>
<td>7C:150</td>
<td>Psychological Aspects of Women's Roles</td>
</tr>
<tr>
<td>7C:260</td>
<td>Issues and Application in Counseling Women</td>
</tr>
<tr>
<td>7P:140</td>
<td>Sex Role Stereotyping and Socialization in Education</td>
</tr>
<tr>
<td>8:114</td>
<td>American Regional Literatures (Southern Women Writers)</td>
</tr>
<tr>
<td>8:124</td>
<td>American Poetry (Autobiographical Mode: Women Poets of the '60's and '70's)</td>
</tr>
<tr>
<td>8:125</td>
<td>Modern British and American Poetry (Women Poets)</td>
</tr>
<tr>
<td>8:176</td>
<td>Literature and Philosophic Thought (Origins of British Feminist Thought)</td>
</tr>
<tr>
<td>13:123</td>
<td>Female Protagonists in German Literature</td>
</tr>
<tr>
<td>16:99</td>
<td>Historical Background of Contemporary Issues</td>
</tr>
<tr>
<td>16:133</td>
<td>European Women: Sex, Society and Culture</td>
</tr>
<tr>
<td>16:182</td>
<td>Studies in History of Women in America</td>
</tr>
<tr>
<td>16:287</td>
<td>Readings: History of American Women</td>
</tr>
<tr>
<td>16:138</td>
<td>Sex, Society and Culture: Traditional Europe</td>
</tr>
<tr>
<td>16:159</td>
<td>Sex, Society and Culture: Modern Europe</td>
</tr>
<tr>
<td>91:293</td>
<td>Discrimination in Employment</td>
</tr>
<tr>
<td>96:106</td>
<td>Nursing in the Social Order</td>
</tr>
<tr>
<td>28:102</td>
<td>Research on Women in Sports</td>
</tr>
<tr>
<td>42:125</td>
<td>Child Care Centers: Development and Administration</td>
</tr>
<tr>
<td>34:000</td>
<td>Women in Power</td>
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<tr>
<td>34:108</td>
<td>Introduction to Women's Studies: Sociology of Sex Roles</td>
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<tr>
<td>34:264</td>
<td>Seminar: Socialization and Self-Concept (same as 45:203)</td>
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<tr>
<td>55:141</td>
<td>Images of Women in Hispanic Literature</td>
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<td>36B:142</td>
<td>Film in Society (Images of Women in Film)</td>
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<td>36R:30</td>
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World Order Studies

Program director: Robert E. Van lieften
Acting program director: Lloyd D. Berry

The existence and quality of life are increasingly threatened by forces over which humankind has so far displayed little or no control: war, nuclear proliferation, exploiting populations, spreading famine, widening poverty, rampant pollution, and dwindling resources, to name a few. Some say there is nothing we can do to avert the ultimate catastrophe these forces imply. Others say civilization will survive no matter what. But whatever one's long-term viewpoint, the evidence is everywhere that these forces must be examined, discussed, and acted upon with urgency.

In direct response to this urgent need, The University of Iowa is offering a new multi-disciplinary, non-degree program in World Order Studies. The Program seeks the fullest possible development of individual capabilities in relation to ensuring human survival and human dignity on a worldwide basis. It is concerned with achieving heightened sensitivity to the basic interdependencies of "Spaceship Earth"—past, present, and especially future.

The World Order Studies Program provides an intellectually challenging opportunity to learn about significant global problems not adequately or thoroughly covered by any one department or college. Additionally, it encourages the integration of personal and professional concerns with an eye to human enrichment and service for the future.

As part of a growing field of international education and research that is preeminently policy-centered and solution-orientated, the Program is considered especially useful to students who are working toward careers in government, the diplomatic service, and in the United Nations and related organizations. Further, it is highly relevant to careers in business, journalism, law, social work, and urban affairs, as well as engineering, medicine, and other related fields. Students interested in the military, teaching, and other professions which are concerned with social attitudes and cultures will find the Program attractive. It is particularly appropriate to the field of education since almost any academic subject will profit from a World Order Studies perspective. In short, many diverse careers can benefit from the World Order Studies Program.

The Program is available to students from throughout the University, but is intended mainly for undergraduates. Thus it is designed with the following students particularly in mind: (1) students who wish to broaden their knowledge about present and future world affairs; (2) students who wish to pursue a career in a traditional degree program; and (3) students who seek to establish an area of concentration in the program leading to the Bachelor of General Studies degree. In every instance, however, the Program is subject to all the requirements (including "core course" requirements) of a student's chosen department or college, and to all the rules and regulations of the departments and colleges associated with the Program.

Topical Focus

In the belief that a more peaceful and sane world is within human reach, the World Order Studies Program focuses primarily on the following four categories of critical global concern: war prevention, human rights, economic welfare, and ecological stability. Each of these broad categories is seen as a general curricular reference-point for many different issues of fact and policy. Consequentially, each involves a diversity of inquiries from a variety of disciplinary perspectives. Seeking to bridge, and hence to augment, the traditional disciplines, they serve to call attention to those global problems which appear to have outstripped the existing nation-state system and which seem, therefore, most demanding of investigation and solution as humankind moves into the 21st Century: (1) how to limit violence and prevent wars so that nations and peoples will be governed more by persuasion than by coercion; (2) how to expand social justice so that discrimination and oppression will be reduced and more people given more opportunity to determine what should happen to their lives; (3) how to raise levels of economic well-being so that degrading poverty will no longer be the bane of billions; and (4) how to restore the global environment so that people can enjoy the benefits of Earth in good health and without fear of pollution and the waste of finite resources.

Methodological Orientation

Because the four problem areas comprising the topical focus of the World Order Studies Program involve many distinct issues of fact and policy, each is accorded detailed separate analysis. However, because each of them and the issues they embrace are fundamentally interdependent, they also are examined in a coordinated, multi-disciplinary manner. A principal aim of the Program is to encourage understanding of the four problem areas form an integrated global perspective—much as students of national politics and urban and regional planning view national and local community problems.

Additionally, as part of an updated form of world citizenship education, the Program stresses values clarification and futuristic thinking. It considers not only what is politically and technologically possible, but also what is humanistically desirable relative to the major problems facing the world community. Accordingly, it explores all the methods and skills of the behavioral and social sciences.

Finally, through lectures, films, simulations, and other pedagogical methods, the Program incorporates many different kinds of learning experiences. In time, building on particular student interests, field work and independent research will be encouraged.

Curriculum

The following newly developed and previously offered courses comprise the curriculum of World Order Studies Program to date, organized according to the Program's principal topical and methodological concerns. Because all courses are subject to schedule change, students are advised to consult the University's Schedule of Courses. Courses marked with an asterisk (*) are considered introductory, and therefore are listed out of numerical sequence.

General Introductory

*000:100 Global Interdependence and Human Survival: An Introduction to World Order Studies
016:178 The United States in World Affairs: 1900 to the Present
030:013 Introduction to World Politics
030:110 Introduction to International Law
Same as 91:285
035:181 The United Nations
044:185 The Changing World

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Most appropriate of these topical courses are those marked by an asterisk (*). Introduction to International Law (3031.110, 301.282) and Preferred World Futures (452.173, 452.175) are recommended.

Use II. All the basic Use courses, plus the introductory courses to each of the four problem areas comprising the topical focus of the Program: Politics of War and Peace (3030.166); Human Rights (3030.165); Introduction to Global Poverty (554.079); and Introduction to the Global Environment (544.124). They are intended as a relatively detailed survey of world order problems and issues, but if possible should be supplemented by introduction to International Law (3050.110, 301.282) and Preferred World Futures (452.173), especially appropriate for students seeking a minor in a traditional degree program or an area of concentration in the program leading to the Bachelor of General Studies degree.

Use III. All the basic Use courses, plus the introductory and three or four other courses listed under one of the four problem areas comprise the topical focus of the Program. These are intended for intensive study in a particular area of world order concern. If possible, they should be supplemented by introduction to International Law (3050.110, 301.282) and Preferred World Futures (452.173), as they are especially appropriate for students seeking a minor in a traditional degree program or an area of concentration in the program leading to the Bachelor of General Studies degree.

The above three uses of the World Order Studies Program are suggestions only. They are not seen as necessarily the best alternatives under all circumstances. For example, students admitted to Teacher Education Programs of the College of Education may find it sufficient to take only the basic introductory course (3031.110) and the courses listed under "Curriculum and Teaching." Nor are the above three uses mutually exclusive or incapable of adaptation to related University courses not listed above. Thus, students interested in "area studies" courses which may relate significantly to the Program may prefer some variations on the above. So, also may students specializing in foreign languages and cultures. Indeed, because the problems of world order often are a consequence of insensitivity to the unique perspectives of different peoples, the study of foreign languages and cultures is encouraged.

Some courses are intended to be invited with the Program Director as well as their immediate advisors when planning their schedules. In any event, questions relating to course priority and sequencing are best answered through close consultation.

Faculty
The faculty for the World Order Studies Program is drawn from throughout the University. The core faculty who have helped to develop the Program to date come from the fields of anthropology, business administration, economics, education, engineering, English, geography, law, linguistics, political science, religion, social work and sociology. Each is interested in different aspects of world order, but all subscribe to the view that the problems of world order require an integrated, policy-oriented and futuristic approach.

Sponsorship
The World Order Studies Program was initiated by, and is offered through, the Center for World Order Studies, formerly a project of The Stanley Foundation (Muscatine, Iowa) in cooperation with the University of Iowa. The Center Center developed the Program with financial and other assistance provided by The Stanley Foundation, the Institute for World Order (New York City), the State University of Iowa Foundation, and The University of Iowa.

The Center is in the process of coordinating and continuing development of the Program. Additionally, it advises students, hosts guest speakers and conferences, and maintains close union with other internationally concerned individuals and groups both within and outside the United States.

The Center's Program is administered by a faculty director with the assistance of a rotating advisory committee comprised of University faculty, administrators. To ensure the multi-disciplinary nature of the Program, ordinarily no more than one committee member comes from the same department or office.

Zoology
Program chairman: Jerry J. Kittles
Faculty: professors Richard V. Benkings, Hugh Dingle, Joseph Probst; Richard D. Stain; Jerry J. Kittles, Roger D. Millikan,James Daniel Miller; graduate teaching assistants: Ms. Susan Bauman, Ms. Teresa R. Baum; lecture B. Hof, Eleanor R. Miller; associates: professor George D. Clark, Ms. N. F. Gray; assistant: George G. Grayson; graduate assistants: Stephen P. Probst; graduate student: David I. Sciarch. Associate professor Leslie K. Johnson, Carol R. Newland

Undergraduate Program
The undergraduate degree program in zoology provides a sound liberal arts background for a career in biological science. Graduates may enter directly into government service or industry. The program also prepares students for advanced degree programs leading to the research, teaching, or continuing professional work in zoology.

In other departments:
8W.10 Expository writing 3 s.h.
22M.16 Calculus for the Biological Sciences 3 s.h.
22M.25 Calculus I 4 s.h.
4:1, 4 Principles of Chemistry I, II 6 s.h.
4:6 Elementary Chemistry Laboratory 2 s.h.
4:123 Organic Chemistry I 3 s.h.
99:120 The Chemistry of Biological Materials 3 s.h.
29:17-18 Introductory Physics I-II 8 s.h.
or
20:1-2 College Physics 8 s.h. 

In the Zoology Department:
37:7 Principles of Animal Biology 5 s.h.
37:128 Fundamental Genetics 3 s.h.
and
37:129 Fundamental Genetics Laboratory 2 s.h.
or
37:109 Genetics 4 s.h.
37:105 Cell Physiology 4 s.h.
37:131 Evolution 4 s.h.

Electives in zoology or other science-mathematics 15-16 s.h.

Courses which may be used to fulfill the 33-hour requirement in zoology include 27:3 and any course numbered 100 or above (other than 37:125), except that no more than three hours can be included from 37:196-199. In addition, up to eight hours of courses beyond the requirements in other natural sciences and mathematics may be substituted, subject to the following limitations:
a) Courses taken in the departments of Botany, Chemistry, Geology, Physics, and preclinical departments of the College of Medicine must be numbered 101 or above; any such 100-level course may be used except A Plant in C Chik (12:112) and other comparable courses directed primarily at non-science students.
b) Any course taken in the Division of Mathematical Sciences must have first-semester Calculus (22M:25) as a prerequisite.

Students are encouraged to take courses in zoology and other sciences beyond the required minimum.
For general requirements for B.A. and B.S. degrees, see "College of Liberal Arts."

Honor Students in the college-wide Honors Program may earn as Honors credit in psychology by completing a total of at least six semester hours in 37:196 Honors Laboratory Research. 37:197 Honors Readings in Zoology and 37:198 Honors Seminar in Zoology.

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 at research lectures are pursuits 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 teaching or administrative functions. More than 80 percent of the doctors of the last two decades have, at one time or another, been engaged in college or university teaching. A substantial number of students completing their training with an M.S. degree have obtained technical or professional positions, some of which require assumption of independent responsibility in performance or planning.

Each of the members of the Department carries out research. Programs in cell biology, developmental biology, genetics, molecular biology, neurobiology in its various aspects, ecology, behavior, physiology and parasitology are included in the Department, and most of these have auxiliary aspects which are served through work in other departments, sometimes with joint sponsorship of faculty in the other departments. For purposes of student advising, these programs have been consolidated into four general areas: developmental biology, ecology and behavior, genetics, physiology. Each student selects one of these areas as a specialty, and is thereby advised by the faculty of that area, his or her program 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 audited. It can recommend that particular teaching or research experiences be sought. It has the obligation of offering advice and counsel. It is responsible for producing the M.S. examination, administering it and providing faculty members for the formal committees which oversee M.S. theses and evaluate the examinations. When a student is approved for continuation toward a Ph.D. degree, he or she selects an advisory committee of five (one from outside the Department), and that committee is thereafter responsible for advising and monitoring the student's progress.

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 exceptions of courses in zoology required to satisfy 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 an oral examination covering his or her graduate program in zoology, with emphasis on the area related to the student's research. This is followed by an oral examination concerned mainly with the work reported in the thesis.
The M.S. degree without thesis requires 34 semester hours of graduate credit and a library research report. No more than four semester hours of credit may be granted for the research report. Credit may be earned in graduate courses in zoology or cognate sciences, these courses to be determined in consultation with the student's thesis committee and tailored to fit the student's back- ground 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 ex- amination (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 Zoology

Thirty semester hours of graduate credit are required of all students who earn this degree with thesis. Ordinarily six to eight semester hours are assigned to thesis research and writing, eight to twelve semester hours to graduate courses in zoology, eight semester hours to graduate courses in botany and the remaining semester hours to free elective courses. Following acceptance of the thesis, the candidate must pass a written examination covering graduate programs in botany and zoology. This is followed by an oral examination based mainly on the work reported in the thesis. The botany and Zoology department offers a 16-week term hour pro- gram leading to the M.S. in biology, without thesis.

The Ph.D. Degree in Zoology

For each Ph.D. degree candidate a department* committee is formed, of which the candidate's faculty sponsor is chairman. The committee is charged with establishing specific course or proficiency requirements which the candidate must meet. The background of the candidate, and his or her current and prospective research interests, are taken into consideration. The committee also establishes that portion of the formal coursework or particular proficiencies (such as ability to read certain modern foreign languages) which will be demanded of the student before admission to the comprehensive examination. In this examination the candidate is expected to demonstrate knowledge of the funda- mentals of zoology and mastery of one or two specialized fields. Unless otherwise indicated the ability in research through the M.S. thesis, or through equivalent research work, in his or her research, which culminates in a 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 Aid

Nearly all of the graduate students in the Department receive some support, the largest number from awchilating assistanships, scholar- ships 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 de- velopmental biology, cell and molecular biology, and neurobiology training programs administered by the Department. Two of these programs support postdoctoral fellows. Support through interdis- ciplinary programs in genetics (predoctoral) and cancer (postdoctor- nal) is also available.

The Department also participates in the University-sponsored program of teaching-research fellowships. Students who apply for any departmental award may be considered for others. If the review panel of the University determines that 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 ex- amination (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.

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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, evolu- tion 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 one 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 of 3.0 and a Graduate Record Examination Aptitude (Verbal + Quantitative) score of 1200. The GRE 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 back- grounds, such as bioinformatics, biochemistry and other related areas.

Special Facilities

The Department is housed in a cluster of contiguous buildings, with 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, rept- iles, amphibians, fishes, invertebrates and vertebrates of various sorts, including protozoa. Special facilities exist for research with viruses, fruit flies and marine organisms. At least 12 walk-in and reach-in environmental chambers are provided for special culture or animal care needs.

There are four transmission electron microscopes, including one for teaching and student research purposes, and one with high resolution capabilities. The Department also houses the scanning electron microscope facility of the University.

The Department is well-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 capabilities, and these with Nomarski optics. Con- focienses of various sorts, including refrigerated, high-speed and ultra-high-speed models, are available.

Other special equipment includes electron microprobe and chroma- tography apparatus; electron amplifying and X-ray detecting equipment
37-286 Molecular Endocrinology Seminar 0-1 a.h.
Readings, reports, discussions on topics of current interest, with implications for fields of genetics and development. May be repeated. Prerequisite: consent of instructor.

37-287 Cell and Molecular Development 3 a.h.
Informal discussions of topics in current interest in developmental biology. Prerequisites: consent of instructor.

37-211 Seminar: Cell Structure and Function 2 a.h.
Lectures and reports on current research. Prerequisite: 37-153 or equivalent.

37-218 Genetics Seminar 0-2 a.h.
Lectures, demonstrations, release on selected topics in genetics. May be repeated. Prerequisite: 37-128 or consent of instructor. Same as Microbiology 55-215 and Biology 5-125.

37-217 Seminar: Zoology 0-1 a.h.
Weekly lectures on current interest. Invited speakers.

Lecture and laboratory and on methods of thin sectioning, embedding, ultra-thin sectioning and staining; theory, use, maintenance of electron microscopes; associated photographic techniques. Prerequisites: 37-123, 37-21 or equivalent, and consent of instructor. 37-111 recommended.

37-299 Seminar: Endocrinology 2 a.h.
Selected topics of current research interest in basic physiology and biochemistry of hormone action. Prerequisite: 37-190, 37-19 or equivalent.

37-298 Seminar: Hormones and Behavior 2 a.h.
Discussion, readings, and reports on topics concerning recent and theoretical aspects of hormone-behavior. Prerequisites: any seven 37-140, 37-190 or 37-134, or equivalent in physiology and behavior.

37-293 Seminar: Theoretical Ecology 2 a.h.
Current concepts in ecosystems ecology. Prerequisite: 37-123 or consent of instructor.

Discussion, readings, and reports on topics concerning behavior and ecology in populations and communities. Prerequisites: course work in ecology and behavior, or consent of instructor.

37-240 Seminar: Developmental Genetics 2 a.h.
Lectures, reports, and discussion on genetic aspects of development. Prerequisite: 37-128 or equivalent.

37-263 Seminar: Behavioral Genetics 1 a.h.
Prerequisite: 37-20.

37-271 Cell Physiology 2 a.h.
Current topics in physiology studied by critical reading of the scientific literature. May be repeated. Prerequisite: 37-105 or consent of instructor.

37-273 Seminar in Cellular and Molecular Biology 1 a.h.
Progress reports by students and faculty, with emphasis on recent research studies. Topics include information transfer and regulation, assembly and development of cellular processes, metabolism and transport. May be repeated for credit. Prerequisites: consent of instructor. Same as Biological Sciences 60-373, 51-373, 51-372, 152-272.

37-265 Readings in Zoology 0-1 a.h.
Prerequisite: consent of instructor.

37-264 Seminar in Neurobiology 0-1 a.h.
Prerequisite: consent of instructor.

37-262 Readings in Systems Transmission 2 a.h.
Current research on the anatomy, embryology and physiology of central transmission in invertebrates and vertebrates. Prerequisites: 37-109, 37-125 or 37-141, and introductory course in chemistry, or consent of instructor.

37-255 Electron Microscopy for Graduate Students 1 a.h.
In-depth study of theory, use and maintenance of the electron microscope for students doing basic research which requires limited use of electron microscopic techniques. Prerequisite: consent of instructor.

37-250 Advanced Electron Microscopic Techniques 2 a.h.
Comprehensive 37-255, but emphasizes experimental aspects of electron microscopy, including negative contrast, shadow casting, cryosurgery and xerography. Prerequisites: 37-255, biochemistry and consent of instructor.

37-268 Problems in College Biology Instruction 1 a.h.
Discussion of theoretical and practical problems. Restricted to graduate students.

37-266 Research: Zoology arr.

37-265 Independent Study in Zoology arr.

Lakeside Laboratory Courses

L-101 Field Biology 5 a.h.
Introduction to general ecology and ecology, especially field work. Instructed for students with a basic background in biology; who desire the field experience.

L-103 Aquatic Ecology 5 a.h.
Local aquatic plants and animals, including problems of ecosystems; current basic ecological principles. Field work and studies are made with fish, but the course is one technical instruction. Instructed for students with some biological background, including some zooLOGY, chemistry and physics.

L-104 Aquatic Ecology 5 a.h.
Final project work as continuation of L-103.

L-105 Limnology 5 a.h.
Structure, life cycles and biogeographical relationships of representative biota. Field work and identifying local biota; experimental studies of diatom cycles, etc. Instructed for students in a special techniques, in joint seminar on methods for students with some background in Limnology and invertebrates, biology.

L-106 Prospecting 5 a.h.
Field work, with emphasis on morphology, physiology, anatomy and physiology of field work as an essential field. Instructed for students with some basic work.

L-107 Field Invertebrate Zoology 5 a.h.
L-111 Research 5 a.h.
L-112 Research 5 a.h.
L-113 Independent Study 5 a.h.
L-114 Independent Study arr.
L-115 Field Entomology 5 a.h.
L-116 Biology of Microbes 5 a.h.
Natural history and systematics of fresh-water and salt-water, microorganisms. Field work and laboratory investigations including use of sympathetic and portable projectors. Special projects and informal meetings included. Instructed for advanced students in the field of advanced work, and with suitable facilities. Bring all reagents, tools, etc.

222 Zoology
In the College of Business Administration, the B.B.A. candidate must satisfy the following minimum common requirements:

- **Business Administration**: 6 a.h.
- **Finance**: 6 a.h.
- **Accounting**: 6 a.h.
- **Marketing**: 6 a.h.
- **Operations Management**: 6 a.h.
- **Management**: 6 a.h.

Required courses in business policy are available from the department of business administration.

- **Credit by Examination**: Students may earn up to 12 semester hours of credit by examination. Selected exams from the College-Level Examination Program (CLEP) of the College Entrance Examination Board are used. It is possible to receive exemption with or without credit for some of the common requirements of the course. Information on the CLEP examinations is available from the liberal arts advisory office.

- **Maxwell 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 advisor and instructor. However, a student may not count more than 15 hours on such courses.
semesters hours of pass/fail credit in his or her last 60 semester hours of coursework. Courses with the 6A, 6B, or 6C prefixes which are taken to satisfy the common business requirements may not be taken pass/fail, nor may courses in the student’s major area or areas of concentration. Pass/fail registration must be completed during the first three weeks of a semester or the first two weeks of a summer session. For courses taken on a pass/fail basis, a grade of D or F is recorded.

Second-Grade-Only Option

Unless otherwise indicated is involved and with permission of the student, a student may be permitted to repeat a University course and have only the grade and credit of the second registration used in calculating his or her cumulative grade-point average. This option may be applied to a maximum of 16 semester hours of work.

Admission

Admission is normally at the beginning of the junior year. Second-semester sophomores may be admitted if an accelerated program record has been established. Unconditional admission requires at least a 2.35 grade-point average (A=4) in all college-level courses undertaken, including all courses undertaken at Iowa and all business and economics courses. The applicant should also have satisfied the following common requirements: rhetoric-communication, psychology/sociology, quantitative methods, accounting and econometrics, and either historical-cultural or literature.

No more than 60 semester hours, or equivalent, of transfer credit will be accepted for a student transferring from a two-year institution. Transfer credit for business and economics courses taken during the freshman and sophomore years are counted toward the B.B.A. degree only if such courses are normally offered at the same division course at Iowa.

Fulfillment of the minimum requirements does not ensure admission. The college’s admission committee reviews all applications and selects the applicants who appear best qualified. Students who have minor deficiencies in meeting admission requirements may be granted conditional or provisional admission.

Interdepartmental Graduate Programs

Master of Business Administration

The Master of Business Administration (M.B.A.) program is designed for individuals preparing for professional administrative careers primarily in business. The program gives the individual a mean of enhancing career opportunities and at the same time provides industry and government with the professional personnel required in a dynamic economy.

The curriculum is designed for candidates whose undergraduate majors were in liberal arts, science, engineering or other nonbusiness areas, as well as for graduates of schools or colleges of business administration. For the student who has taken no undergraduate business administration courses, 37 semester hours of coursework are required. For the student holding an undergraduate degree in business administration, certain of the requirements will normally be waived. However, in all cases, a minimum of 33 semester hours of graduate work is required. The following courses, totaling 24 semester hours, are normally required of the student with a nonbusiness baccalaureate degree. A student who majored in business must take any of these courses he or she has not already considered. This work is normally taken in the first year of the M.B.A. program.

6A:192 Financial Accounting 3 s.h.
6B:193 Computer Methods—M.B.A. 3 s.h.
6B:194 Managerial Finance—M.B.A. 3 s.h.
6B:195 Management of Organizations—M.B.A. 3 s.h.
6B:196 Marketing Management—M.B.A. 3 s.h.
6B:197 Economics—M.B.A. 3 s.h.
6B:198 Society, Law and Business—M.B.A. 2 s.h.
6E:100 Price Employment and Production Theory 3 s.h.
6E:190 Consumer and Firm Behavior 2 s.h.
6E:191 National Income Analysis 2 s.h.

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. advisor, selects six semester hours of coursework in that area. Areas of concentration may be specified in finance, marketing, industrial relations, organizational theory, management systems and accounting.

The following are the core course requirements, totaling 33 semester hours:

Integrated Core (18 s.h.):
6A:214 Accounting for Management 3 s.h.
6B:261 Administrative Science I—M.B.A. 3 s.h.
6B:265 Administrative Policy—M.B.A. 3 s.h.
6B:271 Statistical Methods—M.B.A. 3 s.h.
6B:273 Economic Theory—M.B.A. 3 s.h.
6B:275 Operations Research in Business—M.B.A. 3 s.h.

Applied Core (9 s.h.):
6B:215 Financial Policy Decisions—M.B.A. 3 s.h.
6B:232 Marketing Management—M.B.A. 3 s.h.
6B:256 Industrial Relations—M.B.A. 3 s.h.
6B:280 Management Systems—M.B.A. 3 s.h.
6E:253 Area of Concentration 6 s.h.

Doctor of Philosophy in Business Administration

The Ph.D. program is intended for individuals preparing for faculty positions in universities 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 non-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 virtually any later sequence of more specialized courses. Ideally, the student should complete all requirements in the basic areas before proceeding to the elected and specialized areas. The
requirements in the basic areas may be satisfied by passing a qualifying examination or by successfully completing each course. The basic areas and required courses are:

**Economic Theory**
- 6E:203 Microeconomics I 3 s.h.
- 6E:204 Macroeconomics I 3 s.h.

**Statistics and Quantitative Analysis**
- 6E:288 Management Science for Decision Mak-
  ing—Ph.D. 3 s.h.
- 6E:286 Statistics for Decision Making I—Ph.D. 3 s.h.
- 6E:287 Statistics for Decision Making II—
  Ph.D. 3 s.h.

**Behavioral Sciences**
- 6E:266 Behavioral Science and Business Orga-
  nization I 3 s.h.
- 6E:267 Behavioral Science and Business Orga-
  nization II 3 s.h.

**Social Environment**
- 6E:206 Social Environment of Industry—
  M.B.A. 3 s.h.

**Elective Areas**
Each student elects two areas for intensive study. With the approval of the adviser and the director of graduate studies in business administration, the student chooses two 200-level courses in each of two areas. Any student who, in any elective, does not attain a scholastic level of achievement deemed essential for a Ph.D. candidature may be required to take a comprehensive exami-

One of the elected areas must be, and both may be, in business administration. The business administration elected areas may be accounting, finance, information theory, organizational behavior, marketing, industrial relations or insurance. However, no attempt is made to restrict the elected areas to traditional classifications.

The elected areas may not be in the behavioral sciences, social environment or an area which combines economic theory, statistics and quantitative analysis.

**Specialized Areas**
As a preparation for dissertation research, the student selects two areas for specialization and takes two graduate-level courses in each. One or both specialized areas may be a continuation of the coursework taken in the elected areas. They also may be from three of the student's four basic areas.

It is possible for a student to move through the basic and elected areas without taking a comprehensive examination, but all stu-

- Students must pass written comprehensive examinations in both of their specialized areas. In neither specialized area is the exami-

- Solutions to two courses in that area; the examination assumes that the student has completed requirements which give him or her a mastery over the field which is being examined.

- Following completion of all areas and after passing written comprehensive examinations over the specialized areas, the stu-

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 of Business Administration is located in Phillips Hall, an air-conditioned high-rise building designed especially for pro-

- Extensive research materials for business and economics are maintained in the Main Library, and the facilities of the University

- Center for Labor and Management
As a major continuing education arm of the college, the Center for Labor and Management provides relevant information to manage-

- The Institute for Insurance Education and Re-

- The Institute for Economic Research
The Institute for Economic Research exists in order to facilitate comprehensive and continuing economic research and to establish a formal mechanism for providing interaction with and economic advice to industry and government. The main objectives asso-

- The Industrial Relations Institute
The Industrial Relations Institute was established in the fall of 1975 by the College of Business Administration with the approval of the Iowa Board of Regents. The Institute is designed to bring together faculty and students with interests in industrial relations for the purposes of curriculum matters and research and to conduct continuing education seminars and workshops for practitioners in the field of industrial relations. Faculty associated with the
Accounting

Department chairman: Valdez; C. Lemka

Faculty: professors B.L. Barry, Willard R. Kney, Jr., Helmut Schauer, John H. Smith, professor emeritus Gilbert Haywald, associate professor Valdez; C. Lemka, Cecilia Salazar, associate professors Robert Caputto, Thomas Ring, Wilfred Dunker

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

Accounting is the systematized recording, classifying, and interpretation 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; accounting graduates in industry may 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. in Accounting

All students in the undergraduate program in accounting must complete a basic core of accounting courses including income tax accounting, accounting for management analysis and control, financial accounting, auditing concepts and procedures, and senior seminar in accounting. The undergraduate major in accounting requires a basic core 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 Equities 3 s.h.
- 6A:132 Financial Accounting: Advanced Topics 3 s.h.
- 6A:144 Auditing 3 s.h.
- 6A:145 Senior Seminar in Accounting 1 s.h.

In addition to other business administration courses required of all candidates for the degree Bachelor of Business Administration, accounting majors are required to complete 6B:70 and 6B:71.

The student may take elective accounting coursework beyond the basic accounting core. However, a maximum of 27 semester hours of credit in accounting courses may be counted toward the B.B.A.

Master of Arts

The Master of Arts program in accounting is designed to meet the needs of individuals who wish to prepare further for professional careers in accounting and related fields. The program provides for advanced study in contemporary issues effecting both public accounting and corporate accounting, and establishes a conceptual base for analysis of future issues and for further graduate study.

The Master of Arts degree is awarded upon successful completion of 30 semester hours of graduate study after satisfying the following prerequisites.

Prequisites

- Undergraduate accounting major (or equivalent)
- 6B:70 Quantitative Methods (or equivalent)
- 6B:71 Statistical Analysis (or equivalent)

Requirements

- 6A:220 Financial Accounting Theory 3 s.h.
- 6A:221 Financial Accounting Theory 3 s.h.
- 6A:222 Information Systems and EDP 3 s.h.

Two additional graduate accounting courses (selected from elective course offerings)

- 6B:276 Operations Research in Business-M.B.A. (or equivalent)

- Non-accounting graduate electives (minimum of 12 semester hours)

Students who have not completed all prerequisites normally will complete the M.A. requirements in one calendar year (two semesters and one summer session).

Students who have completed the prerequisites may enter the program and may need up to two years to complete both the prerequisites and the requirements. The first year coursework would be a combination of graduate and undergraduate courses designed to fulfill the prerequisites.

The candidate may elect to write a thesis for which three semester hours of graduate accounting credit may be received. All candidates are required to take an oral comprehensive examination covering the fields of study included in the program. This examination will be arranged by the advisor near the end of the student's program.

Ph.D. Program

Candidates wishing to major in accounting should refer to the description of the program leading to Doctor of Philosophy in the College of Business Administration section.

Courses

Primarily for Undergraduates

4A:1 Introduction to Accounting I 3 s.h.

Survey and analysis of contemporary accounting information systems; emphasis on external reporting by firms to investors, corporate executives and other stakeholders, with an emphasis on investor decision-making, Perpetual: 4A:1 or 4A:11 or equivalent.

4A:2 Introduction to Accounting II 3 s.h.

Survey and analysis of contemporary accounting information systems, emphasis on preparation of information for decision-making in organizations; internal reports and their relation to decisions made by firms. Perpetual: 4A:11 or equivalent.

For Undergraduates and Graduates

4A:115 Income Tax Accounting 3 s.h.

Introduction to federal tax administration, structure and procedures; implications for individual and corporate decision-making. Perpetual: 4A:1 or 4A:11 or equivalent.

4A:119 Accounting for Management Analysis and Control 3 s.h.

Concepts and methods used in internal financial information systems; quantitative and qualitative determinants of organizational decision systems and their implications for accounting information. Perpetual: 4A:11 or 4A:15 or 4A:15 or equivalent.


Concepts and methods of corporate external reporting, theoretical basis of current reporting practices analyzed in context of investment decision models and proposed alternative accounting methods; preparation of major external reports—balance sheets, income statements, balance sheets, and funds statements. Perpetual: 4A:11 or equivalent.
Requirements for the Major in Finance
6B:15 Financial Management
6B:71 Statistical Analysis
6B:111 Investments
6B:113 Financial Markets and Institutions
At least two semester hours of accounting beyond the basic core are also required, followed by any two of the following:
6B:112 Security Analysis
6B:114 Commercial Banking
6B:118 Intermediate Financial Management

Requirements for the Major in Financial Economics
6B:15 Financial Management
6B:111 Investments
6B:113 Financial Markets and Institutions
6E:173 Managerial Economics
6E:103 Microeconomics
These are to be followed by two of the following:
6B:114 Commercial Banking
6B:117 Money and Banking
6E:119 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
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:158 Personnel Management
One of the following:
6B:151 Employment Rights
6B:152 Labor Relations Legislation
One of the following:
6B:153 Collective Bargaining
6B:154 Employee Relations in the Public Sector
One of the following:
6B:155 Manpower Policy and the Development of Human Resources
6B:111 Labor-Manpower Economics
6B:159 Current Issues in Industrial Relations
Any of the eight courses above not previously chosen, or others designated by area faculty.

Requirements for the Major in Administrative Management
6B:158 Personnel Management
6B:161 Individual Behavior in Organizations
6B:52 Group Behavior in Organizations
6B:169 Design and Management of Organizations
One of the following:
6B:168 Managerial Information Processing and Decision Behavior
6B:169 Selected Problems in Administrative Management
Other courses designated by the area faculty.

Requirements for the Major in Management Systems
6B:72 Computer Analysis
6B:177 Simulation Methods
6B:180 Management Information Systems
6B:181 Topics in Management Information Systems
A student who does not wish to take both 6B:176 and 6B:177 may take one of them and one of the following:
22C:16 Introduction to Programming with PL/I
22C:17 Programming with PL/I
56B:144 Information Systems Design
6B:178 Topics in Operations Management
A course approved by the student's advisor.

Requirements for the Major in Management Science
Two of the following:
6B:70 Quantitative Analysis
6B:71 Statistical Analysis
6B:72 Computer Analysis
Two of the following:
6B:175 Decision Theory for Businesses
6B:176 Operations Management
6B:177 Simulation Methods
One of the following:
6B:173 Managerial Economics
6B:178 Topics in Operations Management

Requirements for the Major in Marketing
At least four, but no more than five:
6B:132 Marketing Distribution Systems
6B:134 Marketing Research
6B:135 Consumer Behavior
6B:137 Advertising Theory and Planning
6B:138 Advertising Communications
6B:141 Senior Seminar in Marketing
6B:147 Marketing Management
Courses

Primary for Upper-Division Undergraduates

68:18 Financial Management
3 s.h.

68:28 General Insurance
3 s.h.

68:21 Introduction to Marketing
3 s.h.

68:47 Introduction to Law
3 s.h.

68:21 Administration and Management
3 s.h.

68:70 Quantitative Analysis
3 s.h.

68:71 Statistical Analysis
3 s.h.

68:72 Computer Analysis
3 s.h.

68:101 Directed Readings in Business Administration
arr.

Courses for Undergraduates and Graduates

68:116 Investments
3 s.h.

68:152 Security Analysis
3 s.h.

68:115 Corporate Finance
3 s.h.

68:113 Financial Markets and Institutions
3 s.h.

68:114 Commercial Banking
4 s.h.

4 s.h.

68:118 Selected Topics in Finance
arr.

The minimum number of semester hours for either program is 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 minimum semester hour requirement may be required if the student's undergraduate preparation does not permit him or her to take graduate courses in a selected area. A student in the thesis program will be expected 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. A final oral examination is required in the thesis program.

Any M.A. student without computer programming competence is expected to enroll in a credit or noncredit programming course available at The University of Iowa.
Business Major Option
Complete the requirements for a major in one of these areas in the College of Business Administration:

<table>
<thead>
<tr>
<th>Accounting</th>
<th>65:35 Business Machines Applications 2 s.h.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economics</td>
<td>65:112 Word Processing 3 s.h.</td>
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<tr>
<td>Finance</td>
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<tr>
<td>Financial Economics</td>
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<td>Industrial Relations</td>
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<td>Insurance</td>
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<tr>
<td>Management Systems/Management Science</td>
<td>65:10 Business Data Processing 3 s.h.</td>
</tr>
<tr>
<td>Marketing</td>
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</tr>
<tr>
<td>Administrative Services (see below)</td>
<td>65:100 Decision Making for Consumers 3 s.h.</td>
</tr>
<tr>
<td>Basic Business (see below)</td>
<td>65:106 Principles of Basic Business 3 s.h.</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Accounting</th>
<th>65:2 Business Typing Problems 3 s.h.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economics</td>
<td>65:22 Transcription 3 s.h.</td>
</tr>
<tr>
<td>Finance</td>
<td>65:35 Business Machines Applications 2 s.h.</td>
</tr>
<tr>
<td>Financial Economics</td>
<td>65:112 Word Processing 3 s.h.</td>
</tr>
<tr>
<td>Industrial Relations</td>
<td>65:125 Organizational Communication 3 s.h.</td>
</tr>
<tr>
<td>Insurance</td>
<td>65:126 Written Communication in Business 3 s.h.</td>
</tr>
<tr>
<td>Management Systems/Management Science</td>
<td>65:145 Office Management 3 s.h.</td>
</tr>
<tr>
<td>Marketing</td>
<td>65:155 Business Data Processing 3 s.h.</td>
</tr>
<tr>
<td>Administrative Services (see below)</td>
<td>65:100 Decision Making for Consumers 3 s.h.</td>
</tr>
<tr>
<td>Basic Business (see below)</td>
<td>65:106 Principles of Basic Business 3 s.h.</td>
</tr>
</tbody>
</table>

Requirements for the Administrative Services Major

| 65:2 Business Typing Problems | 3 s.h. |
| 65:22 Transcription | 3 s.h. |
| 65:35 Business Machines Applications | 2 s.h. |
| 65:112 Word Processing | 3 s.h. |
| 65:125 Organizational Communication | 3 s.h. |
| 65:126 Written Communication in Business | 3 s.h. |
| 65:145 Office Management | 3 s.h. |
| 65:155 Business Data Processing | 3 s.h. |
| 65:100 Decision Making for Consumers | 3 s.h. |
| 65:106 Principles of Basic Business | 3 s.h. |
| 65:189 Basic Business and Consumer Issues | 3 s.h. |
| 65:155 Business Data Processing | 3 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.
In addition, these courses are required of all business education teaching majors:

| 65:191 Principles of Business Education | 3 s.h. |
| 75:187 Seminar: Curriculum and Student Teaching | 1-3 s.h. |

Courses for Nonmajors
Two areas of concentration in administrative services without the teacher certification courses (consisting of a minimum of three courses (9 s.h.) in each area or a total of 18 s.h.) can be arranged for students pursuing a nonseeking degree in business administration.

M.A. Program
This program is designed for the graduate student who holds a teacher's certificate and has either a major or a minor teaching area in business education. In purpose is to upgrade professional competence in teaching business subjects in the secondary school or at the community college level.
A minimum of 32 semester hours must be included in the program, within these highly flexible distributions:

Business Administration
Six to 15 semester hours of credit in business administration or related business areas, such as office management, data processing or communication.

Business Education
Nine to 17 semester hours of credit, including three of the following courses:

| 65:203 Seminar: Basic Business | 2-3 s.h. |
| 65:204 Seminar: Teaching Accounting | 2-3 s.h. |
| 65:205 Seminar: Office Education | 3 s.h. |
| 65:207 Seminar: Information Processing | 3 s.h. |
| 65:210 Managing Business Instruction | 3 s.h. |
| 65:240 Seminar: Business Teaching | 3 s.h. |

Education
Six to 12 semester hours of credit in general education areas which meet the professional needs of the student, such as counseling education, higher education, adult education, educational psychology or educational administration.

All courses must be selected with the approval of an advisor. The candidate selects one of two options: (1) three two-hour comprehensive examinations in business education, business administration and education, or (2) two three-hour comprehensive ex-
M.A.T. Program

The M.A.T. program is a 38-semester-hour nonthesis course of study. It is designed for superior beginning 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 pre- and postgraduate education courses which constitute professional preparation for secondary school teacher certification.

Two summers 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: 3 s.h.
- Auditory/Visual 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

One of the flexible nature of this program, the candidate may place emphasis in both colleges (Business Administration and Education), although primary emphasis normally will be given to the various programs in business with particular attention to business education.

Degree Requirements

Two core areas to be chosen from: foreign language, statistics, advanced mathematics, computer programming, scientific method, or other appropriate research tools approved by the advisor.

Appropriate doctoral-level coursework approved by the advisor in each area, for these sections of study:
- Major area—business education (16 s.h.)
- Related area in business (9 s.h.)
- Minor or collateral area in education (9 s.h.)

Completion of at least 90 semester hours beyond the bachelor's degree, including the dissertation and two approved courses in economic theory.

A three-hour comprehensive examination is required in each area of study.

Dissertation.

Admission Requirements

Admission to the University of Iowa Graduate College.

Evidence of satisfactory performance on the Graduate Record Examination.

Evidence of good academic preparation to undertake doctoral work in business education.

Courses

Primarily for Undergraduates

81-1 Basic Typewriting 2 s.h.
- Keyboard economy, problem solving related to personal and business communications such as letters, memos, and reports. Open only to students with no formal training.

82-2 Business Typewriting Problems 3 s.h.
- In-depth development of integrative skills and knowledge necessary for solving problems related to the production of letters, forms, memos, reports, and other business communications. Prerequisite: 81-1 or equivalent.

82-7 Basic shorthand 3 s.h.
- Shorthand theory and development of skill through business dictation and transcription. Open to students who have had one year of high school shorthand or equivalent. Prerequisite: 81-7 or 82-2.

82-9 Transcription 2 s.h.
- Review of shorthand theory, emphasis on development of advanced skill in taking business dictation and in transcribing on a production basis. Prerequisite: 82-2 or equivalent.

82-3 Business Machine Applications 2 s.h.
- Instruction in ten-key adding machines, electronic calculators and on-screen printing calculators, emphasizing business applications. Use of business related mathematical processes and basic statistical measures.

For Undergraduates and Graduates

82-101 Independent Study 2 s.h.
- Individual study in control and research projects in business education. Prerequisite: junior standing or above and consent of instructor.

82-102 Database Modeling for Consumers 3 s.h.
- Application of problem solving in such areas as consumer credit and financial management. Emphasis on critical thinking skills and basic economic principles. Prerequisite: 78-203.

82-104 Principles of Basic Business 3 s.h.
- Organization, principles of business structure, economics and personal finance (advanced primarily for secondary school students of business and social studies majors). Same as 78-104.

82-106 Basic Business and Consumer Issues 3 s.h.
- Exploration of common consumer-business issues such as housing, food, energy, utilities and other topics affecting lifestyles and personal values. Same as 78-106.

82-112 Word Processing 3 s.h.
- Concepts of word processing as a system for improving efficiency of business representa-
tion. Orientation to automatic typewriting/speeding systems. Study of pro-
grams in a word processing system. Prerequisite: 82-2 or equivalent.

82-128 Organizational Communication 3 s.h.
- Organizational, psychological and language processes including: verbal behavior, communication skills, systems and technology. Prior-written satisfaction of necessary prerequisites or equivalent, and junior standing.

82-136 Written Communication in Business 3 s.h.
- Application of communication theory and psychological principles to such business communications as letters, reports and procedures. Prerequisite: satisfaction of written requirements or equivalent, and junior standing.

82-146 Office Management 3 s.h.
- Principles of organization and management related to the information production function in business. Human factors and systems concepts and principles as they relate to office systems. Prerequisites: junior standing.

82-177 Basic Systems Analysis 3 s.h.
- Introduction to systems philosophy, theory and practice: systems analysis, design and measurement, applied systems projects. Prerequisite: junior standing.
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 11 semester hours in 100-level economics courses, including 60:103 Microeconomics and 60:105 Macroeconomics.
Candidates for the B.B.A. degree may meet the requirements for the degree through an approved program 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 these areas of concentration requirement. 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 in current national academic rankings for its excellence in 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.

Master of Arts
The M.A. degree offers the student a rigorous training in applied economic analysis which can be completed in three semesters. If a student has performed well in the first semester, he or she can transfer to the Ph.D. program at that time with no loss of credit. The department also offers a joint M.A.-J.D. program. In this program the Department of Economics accepts up to nine semester hours to apply to the M.A. degree and the College of Law accepts coursework in economics to apply toward the law degree.

M.A. Course Sequence

<table>
<thead>
<tr>
<th>First Semester</th>
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</thead>
<tbody>
<tr>
<td>60:200</td>
<td>Topics in Economics</td>
<td>1 s.h.</td>
<td></td>
</tr>
<tr>
<td>6E:180</td>
<td>Mathematics for Economists</td>
<td>2-3 s.h.</td>
<td></td>
</tr>
<tr>
<td>60:204</td>
<td>Macroeconomics I</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>60:261</td>
<td>Economic History of North America</td>
<td>3 s.h.</td>
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<th>Second Semester</th>
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<tr>
<td>60:205</td>
<td>Price Theory</td>
<td>3 s.h.</td>
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<tr>
<td>6E:184</td>
<td>Methods of Quantitative Economics</td>
<td>3 s.h.</td>
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<tr>
<td>6E:207</td>
<td>History of Economic Thought I</td>
<td>3 s.h.</td>
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<tr>
<td>6E:208</td>
<td>History of Economic Thought II</td>
<td>3 s.h.</td>
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| 6E:203 | Elective | 3 s.h. | 12 s.h.

Third Semester
Electives or Thesis 12 s.h.

Fourth Semester
Electives or Thesis 6 s.h. 4 s.h.

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 personalized sequence of courses within their major areas. The core areas are microeconomic theory, macroeconomic theory mathematical economics, and econometrics. The core itself consists of nine courses designed to be taken in a specific sequence. The academic loads of nine to ten semester hours in the sequence presuppose that the student is employed as a research or teaching assistant. Students not employed may 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 requirement of two semesters of calculus. This requirement must be satisfied by the end of the first semester of the program.

Ph.D. Core Sequence

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<tr>
<th>First Semester</th>
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<tr>
<td>60:200</td>
<td>Topics in Economics</td>
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<tr>
<td>6E:204</td>
<td>Macroeconomics I</td>
<td>3 s.h.</td>
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<tr>
<td>6E:180</td>
<td>Mathematics for Economics</td>
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<tr>
<td>6E:203</td>
<td>Microeconomics I</td>
<td>3 s.h.</td>
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<tr>
<td>6E:211</td>
<td>Mathematical Economics I</td>
<td>3 s.h.</td>
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<th>Third Semester</th>
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<td>60:206</td>
<td>Macroeconomics II</td>
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<tr>
<td>6E:221</td>
<td>Econometrics I</td>
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<td>6E:205</td>
<td>Macroeconomics II</td>
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<tr>
<td>6E:322</td>
<td>Mathematics II</td>
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| Field Course | | | 3 s.h.

For students with a sufficient mathematical and statistical background, part or all of 6E:320 will be waived. Students planning to
Economics

major in econometrics should take 22S:153-154 Introduction to Mathematical Statistics I and II. Students planning to major in economic theory should take a third semester of calculus and 6E:212 Mathematical Economics 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 24 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 relationship between his or her own specialty and other related fields. The major area must include at least one course (three semester hours) in either economic history or the history of economic thought.

The set of eight field courses chosen by each student must be approved by the graduate director in consultation with the graduate advisory committee. The student must maintain a 3.5 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
A written qualifying examination covers economic theory and mathematical economics. 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
A written comprehensive core examination covers economic theory and econometrics.

Comprehensive Examination
The student will complete an oral comprehensive examination by presenting a thesis proposal before a departmental seminar of the faculty and graduate students. A committee of five members of the faculty appointed by the department, on occasion, by the graduate director will evaluate the student's performance. The thesis proposal, presentation, passing of the core examinations, and completion of the major area courses with an acceptable G.P.A. comprise the requirements for admission to candidacy for the Ph.D. degree.

Dissertation Examination
Satisfactory completion of a dissertation research project is the final requirement for the Ph.D. degree. An oral examination in defense of the dissertation research is required before a committee of five members.

Teaching and Research
Teaching and/or directed research are required and important parts of the graduate program. Teaching assistant work closely with the faculty in the Principles of Economics (6E:1-12) program and meet a number of their own discussion sections. Research assistants work closely with one or more of the faculty on research projects. Students on fellowships are also called upon to participate in the teaching and research program at some point in their studies.

Courses

Principles for Undergraduates
Note: 6E:1 and 6E:2 may be taken in order or may be taken simultaneous-ly; they supply similar material. 6E:11 is recommended for S.A. and B.S. students.

6E:1 Principles of Economics
Organization and workings of modern economic society, role of markets, prices, and competition in promotion of economic welfare; regulation of business and labor; analysis of trade relations between nations; production of goods and services; distribution of income and wealth, economic factors in social environment; alternative economic systems; inter- national trade. Prerequisite: satisfaction of University chemistry requirement.

6E:2 Principles of Economics
National income and major, employment, and prices, money and credit, government finance; monetary and fiscal policy; economic growth and development, international finance, economic systems. Prerequisite: satisfaction of University history requirement.

6E:17 Contemporary Economic Problems and Policy
3-3-3 A modern analysis of the latest national and international economic trends and problems and policy issues; topics to be covered include inflation, wage and price controls, unemployment, international monetary problems, the deficit budget, budgetary expenditures, poverty, discrimination in labor markets, energy crisis. No prerequisites. Intended primarily for students unable to fit Principles of Economics, or other economics courses, into their programs. Open to students who have taken 6E:1 or 6E:2.

Economic Analysis and Policy
6E:108 Price, Employment, and Production Theory
3-3-3 Role of markets and price formation in national income analysis, employment, growth, and economic policy; competitive economic systems. A major in economics or consent of instructor recommended. This course is not available to students with previous economics courses. Prerequisite: senior or graduate standing.

6E:109 Microeconomics
3-3-3 Economic theory of consumer behavior, producer behavior, and role of markets in coordinating economic decisions; conditions for efficient resource allocation by competitive mechanisms. Prerequisite: 6E:1 and 6E:2 or senior standing.

6E:105 Macroeconomics
3-3-3 Measurement of national income, unemployment, and inflation; determinants of national income and the price level; analysis of the use of stabilization policies; economic growth; measurement of the cost of living; money and banking. Prerequisite: 6E:109 or 6E:108 or consent of instructor. Emphasis on feasible policy alternatives to deal with problems currently facing U.S. economy. Prerequisite: 6E:1 and 6E:2 or senior standing.

6E:111 Labor-Monopower Economics
3-3-3 Impact of industrialization on labor markets with emphasis on analyzing working class problems; wage payments, labor utilization; wages and fringe benefits; working hours and working conditions. Prerequisite: 6E:109 or 6E:108 or consent of instructor. Emphasis on market institutions in economics. Prerequisite: 6E:1 and 6E:2 or senior standing.

6E:113 Health Economics
3-3-3 An analysis of American medical care industry and applications of economic theories to its problems of production, pricing, and distribution; special attention to supply and demand conditions in markets for hospital and physician services. Impact of public policy on health care. Prerequisite: 6E:1 and 6E:2 or consent of instructor.

6E:115 Economics of Human Resources
3-3-3 Theories of economic incentives to human behavior considered as an economic resource; particular emphasis upon conditions of discrimination in labor markets. Prerequisite: 6E:1 and 6E:2 or senior standing.

6E:117 Money and Banking
3-3-3 Concepts of money, interest, inflation, theory, practice, and policy with respect to the role of money in the determination of price level stability, economic growth, and the world economy. Prerequisite: 6E:1 and 6E:2 or senior standing.

6E:116 Economics of the Government Sector
3-3-3 Economic functions of government in the modern economy; economic decisions relating to government, taxation, budget, and stabilization policies. Public and private expenditures and taxes and their impact on the general economy. Prerequisite: 6E:1 and 6E:2 or senior standing.

6E:123 Political Economy of the Military-Industrial Complex
3-3-3 An economic analysis of the military-industrial complex. The U.S. role in world economic policy. The political and economic consequences for the developing countries. The political, social, and military aspects. Prerequisite: 6E:1 and 6E:2 or senior standing.
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<tr>
<th>Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>6E.330</td>
<td>Seminar in Economic Development</td>
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<tr>
<td>6E.330</td>
<td>Seminar in Econometrics</td>
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<tr>
<td>6E.330</td>
<td>Seminar in Economic Development</td>
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<td>6E.340</td>
<td>Seminar in International Economics</td>
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<tr>
<td>6E.345</td>
<td>Seminar in Monetary Economics</td>
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<tr>
<td>6E.350</td>
<td>Seminar in Labor Economics</td>
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Prerequisites: consent of instructor.
College of Dentistry

Dean: James H. McLean
Executive associate dean: John C. Montgomery
Associate dean for research and program development: Joe C. Medenick
Associate dean for academic affairs: Frederick M. Pelton
Assistant dean for student affairs: C. Frederick Shiue
Director of admissions: Thomas V. Carletti
Coordinator of student affairs: Ralph C. Ageley
Director of systems and computer support: Nelson S. Logan
Business manager: M.J. Brown

The College of Dentistry is both administratively and physically an integral part of the University. It draws upon and contributes to the University’s diverse resources, and its students enjoy all the advantages and privileges enjoyed by the general student body. The College benefits particularly from its cooperative relationship with the colleges of Medicine, Nursing and Pharmacy in the University Health Center, whose teaching, research and service activities have earned international recognition.

Basic Program in Dentistry

The basic educational program leading to the degree Doctor of Dental Surgery (D.D.S.) consists of at least three years of preprofessional study and approximately four years of study in the College of Dentistry. The dental curriculum consists of five basic units:

- Basic Sciences
  - Gross anatomy; biochemistry; biology; physiology; general pathology; oral pathology; pharmacology; microbiology.
- Restorative Dental Sciences
  - Gross, microscopic and radiographic dental anatomy; dental materials; endodontics; operative dentistry; fixed partial prosthetics; removable prostheses.
- Oral Medicine
  - Preventive dentistry; oral diagnosis; dental radiology; oral pathology; anesthesia and pain control; oral surgery; periodontology. In addition, there are selected mini-courses in the BioScience Options Program which are correlated between the basic and clinical sciences.

Community Dentistry

Ethics; epidemiology, nutrition, preventive dentistry; community health; principles of human behavior; dental economics; dental jurisprudence.

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 additional correlative activities in the basic and clinical sciences, such as training in the effective coordination of auxiliary personnel. This instruction is in conjunction with the dental auxiliary utilization program.

Third-year dental students rotate through a series of "clinics" which gives them meaningful exposure to each of the eight clinical disciplines.

Fourth-year dental students are involved in the delivery of comprehensive dental care in a community 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 preceptorships in which fourth-year dental 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-book control, the dynamics of presenting treatment plans to private patients and the relationship of the dentist to the community.

Program Flexibility

A dental student may satisfy departmental requirements by examination in lieu of course participation. The time thus gained may be used to progress through the curriculum at a faster rate.

Facilities

The Dental Science Building, a major unit in an expanded Health Center, enables the College to accelerate its research activities, and facilitates the development of interdisciplinary communication in Health Center teaching, research and patient-care activities. The Health Center includes the colleges of Medicine, Nursing and Pharmacy; a Basic Science Building, University Hospitals and a Health Sciences Library. The Health Sciences Library houses all of the University's special health science holdings, including the College of Dentistry's collection of more than 10,000 volumes on dentistry and allied scientific subjects, and the more than 285 professional journals the College currently receives.

The Dental Science Building consists of connected four-story wings located on either side of a mall. The south wing is devoted to clinical teaching, with various departmental clinic facilities, support laboratories, clinical research space, offices and an automated learning center. The north wing houses a variety of teaching, administrative and research facilities, including teaching laboratories, research laboratories, administration area, an audiovisual production center and the programs in community dentistry.

Promotions and Graduation

Student promotions and graduation are determined by the Academic and Professional Performance Committee 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. The performance committee may recommend to the Dean that a student withdraw from the College or repeat specific courses when the student is deemed generally unprepared to be promoted or to enter the dental profession.
Committee for Appeals
When a student has been advised to withdraw from the College, or desires special consideration on matters concerning promotion or graduation, he or she may appeal this decision to the Dean. All appeals shall be heard by an ad hoc committee appointed by the Dean. The committee considers such matters as student scholastic achievement, promotion, assistance and general fitness to enter the dental profession. The decision reached by the ad hoc committee is final.

State Board of Dental Licensure Examination
The states of Kansas, Colorado, Missouri, Oklahoma, Iowa, Wisconsin, Nebraska, Minnesota, Wisconsin, North Dakota and South Dakota have joined in the formation of the Central Regional Dental Testing Service to replace clinical examinations 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 its secretary-treasurer. Successful completion of requirements of the Central Regional Dental Testing Service will be accepted by the member states for a five-year period in lieu of their individual clinical requirements.

Expenses
The College of Dentistry maintains a Supply-Stimulation-Instrument Management System (S.S.I.M.S.) that provides the student with most of the instruments and supplies necessary throughout dental training. The instrument usage fee for the program leading to the D.D.S. degree is payable in installments over the first three years of the program.

In addition, a fee for expendable laboratory supplies will be charged for each of the first two years. A $100 deposit 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 $5,500 each year of their undergraduate professional studies. Preference is given to students who would not otherwise be able to finance health profession studies. Loans are issued at low interest rates and are repayable over an extended period of time after the recipient completes the course of study. There are also provisions for forgiveness of portions of the loan in consideration of the graduate’s selection of location of service in an area where there is a shortage of dentists.

The Armed Forces Health Professions Scholarship Program is open to dental students from the army, navy and air force. For information on this program, inquire at the College Dean’s office.

A number of short-term loans are available from the American Dental Association, the Iowa Dental Association, the Kellogg Foundation, the Iowa Dental Achievement Fund and other sources, to help students in emergency situations.

Dental students are also eligible for much of the assistance provided through the University’s Office of Student Financial Aid. This includes opportunity for part-time employment.

For further information on financial assistance available to dental students, see the “Scholarships and Loans” section of the Catalog or inquire 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 two percent of the senior class are eligible for Omicron Kappa Upsilon, national scholastic honorary dental society. Two national dental professional fraternities, Delta Sigma Delta and Psi Omega, have chapter houses at Iowa, and both have dental auxiliaries. There is also a Dental Student Wives Club.

Admission
Applications are accepted beginning June 1 of the year prior to the year for which application is made. The closing date for all applications is December 1 for the class entering the College of Dentistry that following August.

The prospective dental student is encouraged to complete a program leading to a standard bachelor’s degree before entering dentistry, or to consider a combined program which enables him or her to earn a standard bachelor’s degree upon completion of the freshman year in dentistry. Preference will be given to applicants who have a bachelor’s degree or who have completed requirements for the degree in a combined program.

General Basis for Admission
Each applicant must submit a completed application form and official transcripts from all colleges attended to AADAS (American Association of Dental Schools Application Service). The forms are available from the University Office of Admissions.

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 preclinical program of study should include:

Rhetoric
Satisfactory accomplishment in English composition and speech commensurate 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 in all cases one-half of the credit must be for laboratory work.

Electives
The applicant should also have sufficient coursework in the social
College of Dentistry

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sciences, philosophy, psychology, literature, 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 is deemed to make him considered outstanding. These candidates may be required to take the Graduate Record Examination Aptitude Test.

Combined Liberal Arts-Dentistry Course

The provision for acceptance by the College of Liberal Arts of 30 semester hours of elective credit earned in any other college of the University makes it possible for the student who enters the College of Dentistry to obtain his bachelor's degree from the College of Liberal Arts upon successful completion of the freshmen year in dentistry. To take advantage of this plan, the student must fulfill all specific requirements for the bachelor's degree, including the requirements for a major in some department or area of concentration. The successful completion of the last 30 hours in the College of Liberal Arts at The University of Iowa preceding enrollment in the College of Dentistry satisfies the College of Liberal Arts residence requirement.

Grade-Point Requirement

The applicant should have a cumulative grade-point average of at least 2.3 (A = 4). In addition to the cumulative grade-point average, the admissions committee gives special consideration to 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 for the dental profession are conducted by the University of Iowa is a testing center. Applicants must take the test no later than October in order to be admitted the following year. 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 is required to submit a deposit within 15 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 Service prior to registration.

Additional Admission Considerations

Fulfillment of the specific requirements listed for admission does not ensure admission to the College of Dentistry. From the applicants meeting minimum requirements, the admissions committee selects those who appear best qualified for the study and practice of dentistry. The committee considers applicants' academic averages, the scores on the required Dental Admission Test and several other factors.

Since the available places in the freshman class of the College of Dentistry are limited, preference will be given to applicants who are residents of Iowa under the University's regulations on residency. 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 Prosthodontics, Dental Hygiene, Removable Prosthodontics, Operative Dentistry and Endodontics, Oral Pathology and Diagnosis, Oral Surgery, Orthodontics, Periodontics and Periodontics. Admission to any of the graduate programs requires satisfaction of all requirements for admission to the Graduate College, possession of the Doctor of Dental Surgery degree or its equivalent, and departmental approval.

Departments also offer postgraduate programs of study designed as preparation for clinical specialty practice. These programs do not lead to an academic degree. Prerequisites for admission to the postgraduate programs are the same as for graduate programs. A certificate is awarded upon satisfactory completion of the postgraduate program.

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:

08:121 Human Gross Anatomy for Dental Students 6 a.h.
Graduate students must have consent of Department head. First year.
08:132 General Histology and Histopathology 4 a.h.
Core course in histology. First year.
An introduction to Microscopic Anatomy and Embryology 2 a.h.
Oral histology. First year.
08:142 Dental Microbiology 5 a.h.
Lectures, exercises, laboratory. Second year.
08:256 Principles of Human Pathology 4 a.h.
79:111 Principles of Pharmacology 5 a.h.
Lectures, exercises, laboratory; correlates pharmacologic action and therapeutic use of drugs, emphasis on those of special interest in dentistry. Second year.
79:112 Pharmacology and Therapeutics 6 a.h.
Lectures and laboratory; provides principles and detailed treatment of various systems. First year.
08:181 Biochemistry for Dental Students 4 a.h.
Chemical constituents and reactions of living matter. First year.

Clinical Management Concepts

Faculty: assistant professor Thomas V. Goff; associate professor Nett H. Lustick; instructors Christopher G. Cornay, Clark L. Selove.
Fixed Prosthodontics

112:116 Advanced DAE 1 a.h.
Self-critical learning program introducing the basic concepts and skills needed to effectively utilize available dental materials. Topics covered include principles of wear and cavitation, laboratory techniques, clinical crown preparation, and inservice evaluation and interpersonal communications. Prerequisites: senior dental student.

112:150 TEAM Clinic 2 a.h.
Cases, seminars, and small group discussions designed to develop concepts and skills needed to manage clinical care delivery teams. Special emphasis on utilization of auxiliary staff, interpersonal communication and personal management. Prerequisites: senior dental student.

112:187 TEAM Clinic 2 a.h.
Weekly series of meetings and student activities arranged to provide educational experience in allied sciences and treatment coordination utilizing computed patient record systems.

Special Courses

113:180 Biostatistics Options 2 a.h.
Selection from a series of elective mini-courses to emphasize the statistical basis of dental practice.

113:175 Programs Ambro 1 a.h.
Opportunities for foreign dental students are regulated with the faculties of dental colleges abroad.

112:250 Advanced Dental Bond 1 a.h.

Fixed Prosthodontics

Department Head: Keith S. Thayer
Faculty: professors B.G. Thayer, J.L. Yoder, associate professors C.W. Sears, associate professor D.P. Holt; instructor J. Nunn
Degree offered: M.S.

Predoctoral Program

The department participates in the D.D.S. program for dental students at all curricular levels. Preclinical courses at the first and second levels prepare the student with a background in materials and techniques used in Fixed Prosthodontic treatment. Third-year students participate in a concentrated clinic program of patient treatment in the specialty area. The department provides a consultation service to students in the fourth curricular level.

Graduate Program

The primary purpose of the Master of Science program is fixed prosthodontics to train and prepare dentists for careers in fixed prosthodontics education and research. It is also acceptable for individuals wishing to further prepare themselves for private practice in fixed prosthodontics. The program satisfies the formal training requirements for eligibility for the American Board of Prosthodontics examination. The graduate student, in cooperation with the head of the Department, and/or the advisor, constructs an individual curricula for his or her program which best fulfills personal interests, goals and desires while meeting all of the minimum requirements of the Department and of the Graduate College necessary for the awarding of the master's degree. This type of individual attention is possible since only two graduate students are normally accepted into the program each year.

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 prosthodontic theory and treatment along with seminar courses in other specialties of dentistry. A course in research methodology as well as a course in statistics or elementary statistical inferences in medicine is required. Some coursework in the general area of education or in one of the basic science areas is also required. Oral and/or written exams are given during the regularly scheduled graduate degree exam period each year.

Any student who is unable to maintain the minimum 2.5 grade-point average during the first year of the program, or those individuals who elect to terminate their program, after one year, will be considered for issuing of 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 D.M.D. degree or its foreign equivalent. No advanced G.R.E. is required.

Courses

113:125 Orals论 2 a.h.
Introductory instruction in concepts of occlusion and mechanics.

114:450 Fixed Prosthodontics Technikum Seminar 1 a.h.
Lectures covering introduction to fixed prosthodontics including definitions, materials, and techniques used in construction of fixed types of restorations and porcelain fixed restorations.

114:451 Fixed Prosthodontics Technikum Laboratory 3 a.h.
Technical procedures involved in construction of fixed prosthodontics.

113:250 Prosthodontics Laboratory 2 a.h.
Manipulation and blending of dental materials is taught through fabrication of laboratory prosthesis.

113:251 Dental Materials 2 a.h.
Relationship of atomic and molecular structure to physical and mechanical properties of both dental materials is taught.

113:255 Dental Materials 4 a.h.
Seminars covering specifically required knowledge is biological and basic science and techniques courses with clinical fixed prosthodontic procedures practice in Dental Implant supplement by individual supervision and demonstration.

Primarily for Graduates

113:255 Seminar: Fixed Prosthodontics 1 a.h.
Confidential discussion on assigned research topics.

113:255 Seminar: Occlusion 1 a.h.
Confidential discussion on assigned research topics.

113:257 Seminar: Dental Materials 1 a.h.
Confidential discussion on assigned research topics.

113:258 Seminar: Fixed Prosthodontics Topics 1 a.h.
Assigned research topics for student seminar presentation.

113:260 Research: Fixed Prosthodontics 1 a.h.
Research design and collection of data on selected research project.

113:260 Research: Fixed Prosthodontics 1 a.h.
Research design and collection of data on selected research project.

113:260 Research: Fixed Prosthodontics 1 a.h.
Research design and collection of data on selected research project.

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113:260 Research: Fixed Prosthodontics 1 a.h.
Research design and collection of data on selected research project.

113:260 Research: Fixed Prosthodontics 1 a.h.
Research design and collection of data on selected research project.
Comprehensive Care

Dental Hygiene

Courses

114:180 Comprehensive Care I 1.0 h.
Surgical, analysis and evaluation of prior knowledge and experiences for the comprehensive care management.

114:191 Comprehensive Care II 1.0 h.
Clinical application of previous concepts, knowledge and clinical skills through a comprehensive care management.

114:201 Group Practice Seminar 1.0 h.
Dynamic applications of a model group practice, with discussion of treatment plans.

114:212 Speciﬁcations in General Practice 1.0 h.
Case studies from the dental speciﬁc practice to develop a case plan and management for patients.

114:223 Clinical Practice in Preventive Dentistry Seminar 1.0 h.
Students present documentation of diagnostic procedures and management of patients.

Dental Hygiene

Department主席: Pauline Erte

Fieldwork supervisor: Pauline Erte

Clinical instructors: Dorothy Bore, Nancy Sirly, assistant professors Jane Bore, Barbara Heers, Patricia Pennington, professor Kay Muthet, instructors John Coulson, Dana Kopp

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

In response to the growing interest of Iowa dentists to employ dental hygienists, the Iowa Dental Hygienists Association was instituted as a field of study at the University in 1953. At that time major emphasis was placed on preparation of dental hygienists for private office practice. Within recent years increasing employment opportunities have become available for University of Iowa dental hygiene graduates in public health, community health centers and other related systems of health care delivery. This has resulted in an expansion of departmental objectives. In addition to providing primary oral health care delivery for Iowa, graduates are prepared to assume responsibility for organizing, implementing, and evaluating dental public health programs; to assume leadership roles in dental hygiene; and to pursue advanced degrees.

Undergraduate Program

For education and licensing, 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.

The Bachelor of Science degree program in dental hygiene comprises two years of general education followed by two years of specialization 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.

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:

- 87:061 Anatomy
- 100:061 Human Microscopic Anatomy
- 86:062 Dental Radiology
- 86:063 Topics in Dental Therapeutics
- 86:065 Basic Pathology
- 52:061 Introduction to Periodontology
- 82:061 Operative Dentistry I 1.0 h.

In addition, juniors learn the basic theory and clinical skills required for dental hygiene programs in clinical hygiene.

During the senior year students advance clinical skills (88:085 Clinical Dental Hygiene). Part of this experience is received in the Department of Periodontology. Each student is assigned to work with a graduate student of periodontics to learn procedures for adults who have active periodontal disease. This experience not only advances the dental hygiene clinical skills, but provides both the hygiene and graduate dental students with a learning experience emphasizing the team approach. Weekly lectures and seminars reinforce clinical learning (88:086 Seminar: Community Dental Health).

Senior students also are enrolled in a community dental hygiene core (88:086 Seminar: Dental Hygiene Concepts and Practice and 88:087 Practicum: Community Dental Health). Courses traditionally taught as isolated subject-oriented units, such as dental health education, public health and audiovisual media, are incorporated into an integrated core of learning. Learning emphasis is on the relationship between the underlying theory and practical application of community dental health. Weekly field experiences enable students to apply knowledge of human behavior, basic principles of communication skills, educational and research techniques to design, implement, and evaluate health care and educational programs.

Admission Requirements

Eligibility for admission to the professional program requires at least 60 semester hours of college coursework and at least a 2.35 cumulative grade-point average (2.4 for a transfer student). In fulfilling the 60 hour requirement, the student must satisfy general
Dental Hygiene

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 (4:1 General Chemistry I);
- Four semester hours of organic chemistry, including biochemistry (4:4 General Chemistry II, General Chemistry Laboratory);
- Four semester hours of microbiology (6:1 Microbiology);
- Three semester hours of nutrition (17:124 Nutrition);
- Four semester hours of psychology (31:1 Elementary Psychology);
- Four semester hours of sociology (34:1 Introduction to Sociology: Principles);
- Four semester hours of anatomy (60:1 Elementary Human Anatomy);
- Four semester hours of physiology (72:13 Introduction to Human Physiology).

These prerequisites provide the educational basis for the dental hygiene courses of study. Completion of a two-year associate degree program in dental hygiene, therefore, does not 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. All applicants are interviewed by the dental hygiene admission committee after submitting their dental hygiene application.

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.

Although a majority of the students who complete the master's degree program at Iowa choose positions in teaching and administration, graduates also are prepared to assume supervisory responsibilities in health care organizations and to conduct educational research and research in the biological and behavioral sciences for the advancement of dental hygiene knowledge.

The curriculum design provides the student with major concentration in advanced dental hygiene theory such as the pathophysiology of dental plaque, the response of periodontal tissue to irritation, and the prevention of dental caries and periodontal disease. Although consideration is given to academic background and career interests, the following program goals are identifiable components of each student's program of study: to acquire advanced scientific knowledge in dental hygiene and supporting fields of study; to understand, interpret, and apply results of new research and pedagogical developments in dental hygiene and related fields of study; and to demonstrate application of technical preparedness to conduct research. Additionally, students have the experience of applying research findings and advanced knowledge to aspects of undergraduate dental hygiene education.

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 34 semester hours of graduate credit, including a thesis on original research.

Under the guidance of the graduate advisor, the student plans an individualized program of study. Approximately twelve semester hours are assigned courses to advance knowledge in dental hygiene and ten semester hours are in research methodology and in thesis preparation and defense.

Courses required in dental hygiene are:

- BR 201 Seminar: Dental Hygiene Literature Review
- BR 202 Evaluation of Dental Hygiene Research
- BR 203 Research: Dental Hygiene
- BR 204 Selected Topics in Dental Hygiene Education
- BR 205 Socio-medical Topics in Oral Health Care
- BR 206 Thesis: Dental Hygiene

Other required courses are:

- 111:212 Statistical Methods in Biomedical Sciences or
- 7P:143 Introduction to Statistical Methods
- 82:224 Design and Evaluation of Research in Dentistry

The remaining twelve hours are to include electives in higher education and biomedical-social sciences that are supportive fields of study.

Eligibility for Degree Candidacy

To be eligible for the graduate degree, the student must achieve a minimum cumulative grade-point average of 2.8 (A=4). Graduates are available to qualified applicants enrolled in the dental hygiene graduate program at Iowa. Traineeships cover full tuition, a yearly tax-exempt stipend, and a dependency allowance.

If the recipient is unable to complete the required 34 semester hours and thesis in two semesters and a summer session, the traineeship may be extended. A prospective traineeship recipient must be admitted to the University of Iowa Graduate College and the dental hygiene graduate program before applying for a traineeship.

Graduate Admission Requirements

Applicants for admission are subject to the general rules of the Graduate College. Departmental requirements include an acceptable score on the aptitude test of the Graduate Record Examination and a 2.8 minimum undergraduate cumulative grade-point average (A=4). The undergraduate education of the applicant should include courses equivalent to those in the undergraduate dental hygiene major at The University of Iowa.

Special Programs

Through an independent study program, students can explore additional career options in dental hygiene or enrich their educational background in a dental hygiene-related field of study. For
example, a student interested in clinical research may become involved in a faculty-directed research project. Others considering graduate programs in public health or dental hygiene education may, under the direction of faculty, conduct projects related to these important areas.

Facilities
University of Iowa dental hygiene majors receive their professional preparation in the University's new Dental Science Building. This building is part of the University of Iowa Health Care complex, one of the nation's outstanding health science teaching, research and patient care facilities.

Financial Aid
In addition to financial assistance available to University students in general, there are a limited number of loans specifically for dental hygiene students. These loans are based on assessment of the student's academic record as well as financial need.

Courses
For Undergraduates

68.025 Dental Hygiene Core I 6 a.h.
Introduction to dental hygiene theory, clinical skills, dental anatomy and dental diseases. Didactic and clinical experiences are related to concept development and dental hygiene procedures.

68.026 Dental Hygiene Core II 6 a.h.
Emphasis on application of dental hygiene theory in the performance of intermediate clinical dental hygiene and oral diseases control procedures.

68.027 Topics in Dental Therapeutics 3 a.h.
Selected study of the effects of drugs on living tissue. Various classes of drugs are evaluated and their application to the clinical practice of dentistry and dental hygiene.

68.032 Clinical Dental Hygiene 7 a.h.
Practice of advanced dental hygiene procedures with emphasis on providing comprehensive care and clinical services.

68.035 Seminar: Dental Hygiene Concepts and Practice 4 a.h.
Review of current research and advances in preventive procedures, clinical, legal and social responsibilities of health care providers; current and extended roles in dental hygiene practice.

68.037 Practicum: Community Dental Health 6 a.h.
Knowledge of dental health, dental care, educational and research techniques are applied in field experiences in design, implement and evaluate health care and educational programs.

68.056 Seminar: Community Dental Health 4 a.h.
Study of factors influencing health, health care delivery and utilization. Dental public health, need and demand for dental care, dental care systems, and research in health care policy are emphasized.

68.111 Independent Study 2 a.h.
Designed for students who plan to pursue advanced study or to explore career interest in dental hygiene, education, research or public health.

For Graduates

68.021 Seminar: Dental Hygiene Literature Review 2 a.h.
Analysis of dental hygiene literature as it relates to the student's major area of concentration in dental hygiene.

68.023 Evaluation of Dental Hygiene Research 4 a.h.
Evaluation of dental hygiene research literature in terms of methodology, clinical application and theoretical relevance.

68.032 Research: Dental Hygiene 4 a.h.
Creation and defense of research project, presentation of a written report and oral defense of research findings.

68.024 Selected Topics in Dental Hygiene Education 3 a.h.
Theory and practical clinical experiences in specific areas of dental hygiene education (individual, didactic or field settings). Content emphasis on theoretical and methodological issues.

68.026 Clinical Teaching 2 a.h.
Evaluation of current research conducted on cultural, sociological and psychological factors influencing oral health and oral health care.


Operative Dentistry and Endodontics

Department Head: Wallace W. Johnson

Head, Division of Endodontics: Allen M. Riedel


Proctorial Program

Graduates Program in Operative Dentistry

The Master of Science program in operative dentistry is designed to prepare the student for teaching and research. Since operative dentistry is not a specialty area of dentistry, there is ample opportunity in the graduate program to pursue courses of advanced study of particular interest to each student.

An applicant for this program must be a graduate of a recognized school of dentistry, and must comply with the requirements for admission to the Graduate College of the University. An interview with the applicant may be requested. In addition to meeting the requirements for a Master of Science degree as set forth by the Graduate College, these departmental requirements must be met:

Satisfactory completion of 48 semester hours of graduate level courses as specified in the plan of study for a Master of Science Degree in Operative Dentistry.

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 an examining committee.

Graduate 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.

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.
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, including all core courses.

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.

Final defense of the thesis and examination of the candidate by examining committee.

Satisfactory performance in a comprehensive written and oral final examination which is of a functional character and does not duplicate semester examinations.

The director of the degree program will act as the student's advisor and as chairman of the examining committee.

**Courses**

**Operative Dentistry**

**D.D.S. Program**

82:208 Operative Dentistry Laboratory for Hygienists 2 a.h.

Basic study of dental materials and methods by which these materials are applied to the restorative processes of operative dentistry.

82:210 Dental Anatomy Lectures 1 a.h.

Lecture and laboratory survey of dental anatomy, histology, and physiology of the teeth and the supporting tissues.

82:212 Operative Dentistry I 2 a.h.

Lecture and laboratory concerning dental anatomy, principles and design of cavity preparations, restoration and replacement of restorative materials, use of instruments in procedures pertaining to operative dentistry.

82:213 Operative Dentistry Laboratory and Clinic I 2 a.h.

Study and application of procedures involved in preparation of hard tissue to receive direct restorations; students prepare all classes of cavities in natural and artificial teeth and use various dental materials to fabricate restorations.

82:108 Operative Dentistry II 1 a.h.

Lecture and laboratory concerning the principles and design of cavity preparations, the restoration of teeth, patient management, pain control and other aspects of clinical procedures.

82:141 Operative Dentistry III 1 a.h.

Clinical training in operative dentistry on patients in operative clinic. Second year.

82:188 Operative Dentistry III 4 a.h.

Lectures, seminars, clinical demonstrations combined with supervised patient treatment for each dental material in dental hygiene; students perform all forms of dental procedures, including periodontal therapy and treatment of gingival diseases and oral mucosal infections.

82:207 Operative Dentistry Seminar III 1 a.h.

Readings and discussions of research relating to problems associated with maintaining dental pulp vitality.

82:228 Operative Dentistry Seminar IV 1 a.h.

Readings and discussions of the research relating to dental materials and their use in operative dentistry.

**Research Program**

82:330 Operative Dentistry Research I 3 a.h.

Topic selection, background studies, laboratory review for research project, begin research project.

82:333 Operative Dentistry Research II 3 a.h.

Present completed, begin research investigation.

82:335 Operative Dentistry Research III 3 a.h.

Complete research investigation, gather and organize data.

82:337 Operative Dentistry Research IV 3 a.h.

Data gathered and organized, begin writing thesis.

82:346 Thesis Preparation Operative Dentistry 3 a.h.

Complete thesis, defense before the committee, and comprehensive examinations.

**Clinical Studies**

82:240 Operative Dentistry Advanced Clinics I 3 a.h.

Describe study of oral and periodontal problems; assignment of students to clinics.

82:241 Operative Dentistry Advanced Clinics II 3 a.h.

Treatment of patient cases in the Operative Dentistry Clinics and discussion of case problems. Concentration on endodontic procedures.

82:242 Operative Dentistry Advanced Clinics III 3 a.h.

Treatment of patient cases in the Operative Dentistry Clinics and discussion of case problems. Concentration on oral and maxillofacial procedures.

82:243 Operative Dentistry Advanced Clinics IV 3 a.h.

Treatment of patient cases in the Operative Dentistry Clinics and discussion of case problems. Concentration on oral and maxillofacial procedures.

82:244 Operative Dentistry Advanced Clinics V 3 a.h.

Treatment of patient cases in the Operative Dentistry Clinics and discussion of case problems. Concentration on oral and maxillofacial procedures.

82:132 Special Topics in Endodontics 2 a.h.

**Endodontics**

**D.D.S. Program**

82:142 Endodontics 2 a.h.

Lectures, seminars and laboratory projects designed to give understanding of basic principles, concepts and technical procedures necessary for treatment of pulpal problems in human teeth.

82:161 Clinical Endodontic Practice 4 a.h.

Clinical instruction: practice clinical procedures evaluated, discussion of treatment of each individual case followed by student's practical application on simple endodontic cases. Provides clinical exposure to endodontics.

82:168 Special Topics in Endodontics 2 a.h.

**Primarily for Graduates**

82:230 Endodontic Literature Review I 1 a.h.

Reading of the past and present of endodontic literature.

82:231 Endodontic Literature Review II 1 a.h.

The introduction to modern methods of endodontics and discussion of dental materials used in endodontics.

82:232 Endodontic Literature Review III 1 a.h.

Discussion of biologic and biomechanical endodontic research.

82:233 Endodontic Literature Review IV 1 a.h.

Research papers, evaluation and discussion of methods and materials, and their use in endodontics.

**Research in Endodontics**

82:234 Research in Endodontics 3 a.h.

Topic selection; preparation and carrying out investigations; completion of research and presentation of results.

82:236 Thesis Preparation in Endodontics 3 a.h.

Introduction for graduate students to areas of research in endodontics, also carries out a clinical or control project.
Oral Pathology and Diagnosis

82:238 Advanced Clinical Endodontics

Clinical treatment of patients, progressing from simple to more advanced, finally to endodontically treated teeth. Students are expected to take for these every semester.

82:340 Seminar in Endodontics I

3 s.h.

Biological concepts of endodontics in relation to selected clinical cases of varying difficulty. Diagnostic and prognostic procedures leading to treatment planning and alternative treatment procedures of clinically difficult cases.

82:342 Seminar in Endodontics II

3 s.h.

Clinical endodontic procedures as they relate to difficult endodontic cases. Evaluation of success and failure of endodontic cases in relation to treatment parameters followed: surgical endodontics, concepts, techniques.

82:362 Seminar in Endodontics IV

3 s.h.

All areas of dental treatment related to endodontics: complex root canals and difficult patient conditions. Relationship of endodontics to other dental specialties, by guest lecturers.

82:286 Practice Teaching in Endodontics

1 s.h.

For students interested in teaching a dentistry, especially in endodontics; organizing a course, practice teaching in independent clinics.

82:291 Tests and Measurements in Dental Education

2 s.h.

Basic practical aspects of tests and measurements as used in dental education, including criterion referenced tests, norm-referenced tests and mixed reference evaluation models.

82:293 Design and Evaluation of Research in Dentistry

2 s.h.

Opportunity to study one stage of research process into meaningful sequence providing practical protocol writing forms for dental research. Prerequisites: introductory statistics.

82:329 Research Writing in Dental Teaching

2 s.h.

Designed to give graduate students or beginning teachers guided experience working with dental students on short-term, behavioral, research projects; student data proposal and supervision topic gathering, not related to thesis preparation. Prerequisites: genetics, educational psychology measurement and research design.

Oral Pathology and Diagnosis

Head: Gilbert E. Lilly
Faculty: professors Gilbert E. Lilly, William H. Tonz, professor emeritus Aimee E. Hender, assistant professors Frank L. Peckham, Harold F. Kitchen, David J. Sprague, Susan Bittinger Phillip E. Henn, Francis H. Sipper, instructor Julia C. Hanley

Degree offered: M.S.

Predoctoral Program

The primary objective of the Department is to provide instruction to dental students and other health-profession students in the etiology and natural history of diseases occurring in and about the oral cavity. Instruction includes the clinical, laboratory, radiographic and microscopic features of these diseases and their management. Instruction is provided in the physical evaluation of patients to identify systemic diseases and their influence on dental therapy and the influence of dental treatment on systemic diseases.

Graduate Program

Advanced instruction is available for graduate-level students in health sciences and related fields in preparation for specialty practice or careers in teaching and research. Candidates for the Master of Science degree are expected to develop substantial ability for research into mechanisms of oral disease and should anticipate that considerable effort will be devoted to completion of an assigned research project and the thesis which will be based on it.

The thesis 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 thirty-six months of full-time work and satisfactory completion of:

The required courses are:

50:213 Advanced Biomedical Studies
50:214 Advanced Biomedical Studies
60:206 Problems
61:159 Pathogenic Bacteriology
63:161 Introduction to Biostatistics
69:201 General Pathology for Medical Students
69:202 Systemic Pathology for Medical Students
69:241 Clinical Pathology
37:211 Seminar: Cell Structure and Function
82:234 Design and Evaluation of Research in Dentistry
86:200 Oral Pathology and Diagnosis Literature Review
86:225 Oral Pathology and Diagnosis Seminar I
86:226 Oral Pathology and Diagnosis Seminar II
96:227 Oral Pathology and Diagnosis Seminar III
86:230 Research in Oral Pathology and Diagnosis
86:240 Oral Pathology Advanced Clinic
86:256 Pathologic Processes
86:256 Advanced Oral Pathology
92:216 Dental Sciences Research Methodology
99:200 Clinical Biochemistry
68:199 Basic Otolaryngologic Science

Since most graduates of advanced programs in oral pathology follow academic careers, students will participate in predoctoral teaching in the Department as part of their education.

Special Program

The Certificate in Oral Pathology combines academic studies with extensive laboratory practice of oral pathology under staff supervision, and requires a minimum of twenty-four months of full-time work for completion. Qualification for the certificate includes completion of all required courses with a passing grade, demonstration of competence in the practice of oral pathology and a satisfactory grade in a final comprehensive examination before an examination committee composed of members of the graduate faculty in the Department of Oral Pathology and Diagnosis. Although additional courses may be elected if circumstances permit or require, required courses in this program are:

86:135 Oral Pathology
86:180 Topics in Oral Pathology
86:200 Oral Pathology and Diagnosis Literature Review
86:225 Oral Pathology and Diagnosis Seminar I
86:226 Oral Pathology and Diagnosis Seminar II
86:227 Oral Pathology and Diagnosis Seminar III
86:240 Oral Pathology Advanced Clinic
86:241 Oral Diagnosis Advanced Clinic
86:242 Dental Radiology Advanced Clinic
86:250 Pathologic Processes
86:256 Advanced Oral Pathology
69:201 General Pathology for Medical Students
69:202 Systemic Pathology for Medical Students
92:216 Dental Sciences Research Methodology
92:213 Advanced Biomedical Studies
50:214 Advanced Biomedical Sciences

Facilities

The laboratories of the Department are equipped for training in histopathology, immunopathology, laboratory diagnosis and experimental pathology. Laboratories are available with facilities for investigation of ultramicroscope of both solid and cellular tissues.

Admission Requirements

Applicants must have completed an accredited program leading to the D.D.S. or D.M.D. degree or its foreign equivalent, with a minimum cumulative grade point average of 2.7 (4.0 scale), and must present satisfactory scores in the Graduate Records Examination and in advanced studies in either biology or chemistry. Final decision on acceptance of any applicant meeting the requirements for admission will rest with the dental administration. Prospective applicants are encouraged to discuss program requirements with the head of the Department prior to application.

Courses

86:081 Basic Pathology
2 a.h.
Clinical correlation between normal and pathologic oral tissues. Physiologic and anatomic variations involved in important diseases associated with oral cavity. Required for dental hygiene.

86:082 Dental Radiology for Dental Hygienists
1 a.h.
Irradiation techniques, radiation injuries, film processing and mounting. First level.

86:088 Clinical Dental Radiology for Dental Hygienists
1 a.h.
Supervision of clinical experiences in taking dental radiographs, processing and mounting films. Second level.

86:103 Topics in Oral Pathology
arr.
Lectures and demonstrations in areas of special knowledge to pathology. For advanced students and graduate colleges.

86:126 Oral Diagnosis and Treatment Planning
2 a.h.
Principles used in examining the oral cavity; correlation between oral and systemic conditions; use of diagnostic aids; translation of diagnostic aids into diagnosis; implications of specific conditions; systematic approach to correct diagnosis. Second level.

86:128 Oral Pathology
1 a.h.
Lectures, conferences, demonstrations, laboratory course devoted to diseases involving oral tissues. Second level.

86:146 Introduction to Diagnosis
2 a.h.
Fundamental principles and techniques in diagnosis, radiology and clinical pathology required for clinical practice are presented in lectures, clinics and seminars. Second level.

86:151 Clinical Pathology
2 a.h.
Study and practice of diagnosis of oral diseases by laboratory methods and clinical procedures. Laboratory procedures and clinical applications, emphasis placed on those procedures adaptable to office practice. Third level.

86:151 Clinical Dental Radiology
2 a.h.
Supervised experience in taking and processing x-ray and dental radiographs, principles and techniques of interpretation. Third level.

86:152 Oral Clinical Diagnosis
1 a.h.
Practical application of diagnosis and treatment planning for patients. Third level.

86:153 Clinical Admissions: Emergency
1 a.h.
Supervised clinical experience in taking and admitting patients; sequence of treatment. Emergent medical and surgical problems, kinesic and emotional problems. Fourth level.

86:155 Advanced Clinical Dental Radiology
1 a.h.
Supervised clinical experience in taking, processing and interpreting dental and oral radiographs. Fourth level.

Graduate Courses

86:221 Oral Pathology and Diagnosis Seminar I
arr.
Assigned reading and preparation of seminars. Prerequisite: consent of instructor.

86:223 Oral Pathology and Diagnosis Seminar II
arr.
Assigned reading and preparation of seminars. Prerequisite: consent of instructor. Summer only.

86:225 Research in Oral Pathology and Diagnosis
arr.
Required for M.S. students. Be expected to meet with other qualified students whose interests coincide with existing departmental research facilities. Includes these procedures. Prerequisite: consent of instructor. May be repeated.

86:230 Oral Pathology Advanced Clinic
arr.
Diagnosis by laboratory methods, conferences with departmental staff, participation in operation of the clinical laboratory. Prerequisite: consent of instructor.

86:241 Oral Diagnosis Advanced Clinic
arr.
Advanced clinical, laboratory and radiographic methods will be applied to the evaluation, diagnosis and treatment of patients with complex clinical problems. Prerequisite: consent of instructor.

86:541 Dentistry Radiology Advanced Clinic
arr.
Advanced therapeutic and oral radiographic techniques, interpretation. Prerequisite: consent of instructor. Spring only.

86:550 Pathologic Processes
arr.
Basic processes of disease, with emphasis on oral pathologic processes. Prerequisite: consent of instructor. Fall only.

86:558 Advanced Oral Pathology
arr.
Intensive study of diseases involving oral tissues. Content is adapted to special interests of students. Bibliographic research, histologic analysis of pathologic processes and diagnostic interpretation emphasized. Prerequisite: consent of instructor.

Oral Surgery

Department of Oral Surgery, L. Hal

Director of graduate hospital services: Donald B. Chase

Secretary: J. M. Hite, 105 E. 1160 S.

86:124 Oral Surgery I

The Department of Oral Surgery is involved in both the predoctoral and residency programs. It combines clinical and didactic teaching on an individual basis to fit the interests, abilities and backgrounds of the students. The predoctoral program is based in the College of Dentistry, with some clinical assignments in the Division of Oral Surgery, University Hospitals. Graduate study is based primarily in the Residency Training Program at University Hospitals.

Predoctoral Program

The predoctoral curriculum is designed to develop a foundation of professional knowledge, coupled with known surgical skills, to enable the student to diagnose and manage properly surgical problems related to the practice of general dentistry. Emphasis is
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, microbiology, pathology, physiology and microbiology, and reviews such closely-related disciplines as prosthodontics, orthodontics, physical diagnosis and laboratory procedures.

The assumption 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 assume 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 rotation 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.

Admissions

The deadline for graduate applications in oral surgery is November 1 for admission July 1 of the next year. Admission is limited to July 1 of each year for a full three-year program.

GRE Aptitude Test is required. The applicant must be a graduate of an accredited college of dentistry and be licensed to practice dentistry in the United States. The applicant should be in the upper one-third of his or her graduating class.

Information required includes application for graduate oral surgery, applicant appraisal form from applicant's references, transcripts, and letters of recommendation from the dean of the dental college from which the applicant graduated, and from two professional references.

Interviews are not required but are strongly recommended. Applicants may be appointed any time after the application has been completed and the staff elects to take official action. All appointments should be extended on or before January 1 prior to the July 1 effective date.

The graduate admission office will send an admission form to the applicant to be completed for the Graduate College by approximately March 1.

Facilities

The University Health Center 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 colleges of Dentistry and Medicine provide an appropriate environment for residency training in oral surgery.

Hospital Organizations

The organizational structure at University Hospitals includes a clinical Department of Dentistry with Divisions of Oral Surgery, General Dentistry and Pedodontics. Under these auspices, the above-mentioned Oral Surgery residency program is conducted, and, commencing July 1, 1976, a two-year general practice residency will be implemented.

Predoctoral Courses

87156 Anesthesiology, Analgesics
1 a.b.

87155 Principles and techniques in oral local anesthesia; oral application of local anesthetics
1 a.b.

87150 Patient Evaluation and Management I
2 a.b.

87152 Patient Evaluation and Management II
2 a.b.

87151 Oral Surgery
2 a.b.

87153 Oral Surgery
2 a.b.

87154 Oral Surgery
2 a.b.

87155 Oral Surgery
2 a.b.

87156 Oral Surgery
2 a.b.

87157 Oral Surgery
2 a.b.

87158 Oral Surgery
2 a.b.

87159 Oral Surgery
2 a.b.

87160 Oral Surgery
2 a.b.

87161 Oral Surgery
2 a.b.

87162 Oral Surgery
2 a.b.

87163 Oral Surgery
2 a.b.
Graduate Courses

87:221 Hospital Procedures 1 a.h.
Hospital tour and registration; patient and department access; general information related to hospital patients.

87:222 Basic Science Review 4 a.h.
Infectious and non-infectious disease; pathogenesis and treatment; special issues in maxillo-facial problems and oral urgencies; may include animal surgery.

87:208 Path and Anatomy Control 3 a.h.
Practical courses of clinical work, presentation of oral and maxillofacial surgery, and anatomy control; placement of various types of complex crowns and removal of materials and techniques.

87:209 Principles of Anatomy 1 a.h.
Study of skeletal and neural structures found in major oral surgical procedures; special emphasis on maxillo-facial problems and oral urgencies; may include animal surgery.

87:211 Literature Seminars and Journal Club 1 a.h.
Special attention to material covered in assigned papers.

87:212 Surgical Case Reports 2 a.h.
Review of the literature and techniques used on surgical techniques.

87:214 Periodontal Interpretation 2 a.h.
Review of theory and techniques used in periodontal treatment.

87:215 Physiotherapy 2 a.h.
Review of principles of physical therapy.

87:216 Oral Pathology Conference 1 a.h.
Review and discussion of current clinical specimens.

87:217 Advanced Oral Surgery Seminar I 1 a.h.
Assignments.

87:218 Advanced Oral Surgery Seminar II 1 a.h.
Assignments.

87:217 Advanced Oral Surgery Seminar III 1 a.h.
Assignments.

87:219 Clinical Oral Surgery Seminar 1 a.h.
Assignments.

87:220 Oral Surgery Research I 2 a.h.
Topics for oral surgery research.

87:221 Oral Surgery Research II 3 a.h.
Topics for oral surgery research.

87:231 Thesis Project 3 a.h.
Thesis project.

87:232 Thesis Project 3 a.h.
Thesis project.

87:235 Thesis and defense. Comprehensive examination; one year program.

87:240 Clinical Oral Surgery I 1 a.h.
Specialty and technical seminars and patient treatment. Clinical practice as assigned surgeon.

87:241 Clinical Oral Surgery II 1 a.h.
Specialty and technical seminars and patient treatment. Clinical practice as assigned surgeon.

87:242 Research Analysis 1 a.h.
Relational studies, oral and maxillofacial surgery and TMJ dysfunction syndrome; diagnosis and management of maxillofacial deformities.

87:243 Pre-Induction Patient Treatment 1 a.h.
Planing dental treatment for pre-induction patient; review of literature.

87:244 Clinical Dentistry 3 a.h.
Specialty and technical seminars and patient treatment.

Orthodontics

Department head: John S. Cox
Faculty: professors George F. Anderson, C. B. Club nier, Richard N. Jaffe, Charles B. Komoroski, associate professor Robert N. Staluy
Degree offered: M.S. (certificate also offered)

Predoctoral Program

The purpose of the predoctoral program in orthodontics is to enable the general practitioner of dentistry to recognize, diagnose and treat uncomplicated simple malocclusions of the teeth.

Program consists of 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 any malocclusion of the teeth requiring comprehensive care. The specialist should be familiar with and able to critically analyze biologic, biomechanic, diagnostic and treatment concepts in orthodontics.

Satisfactory completion of a 23-month period of intensive study, including lecture courses, seminars, clinical practicum and a research paper, qualifies a student for the Certificate of Orthodontics. If a student satisfactorily completes a thesis based on an original research project, he or she will qualify for an M.S. degree in addition to the Certificate of Orthodontics.

Admission

The application deadline is October 1, for the class starting July 1. An applicant selected as one of the "top 10" will be required to interview at the University to be interviewed by the faculty of the Department.

Courses

88:133 Orthodontic Laboratory 1 a.h.
Practical experience in taking and analyzing orthodontic diagnostic records; developing treatment, planning, constructing appliances.

88:135 Orthodontic Diagnosis and Biophysical Procedures 1 a.h.
Introduction to the use of orthodontic equipment and appliances; the psychological and biological evaluation of malocclusions; mental and physical development; growth and development.

88:137 Pre-Induction Patient Treatment 1 a.h.
Tableau for the pre-induction patient; review of literature.

88:128 Clinical Dentistry 3 a.h.
Clinical experience in orthodontic diagnosis, treatment planning and treatment.
Periodontics

Primary for Graduates
90:210 Introduction to Advanced Clinical Periodontology 2 s.h.
For first-year graduate students; emphasis on growth and development, child management, and therapy.
90:211 Problems
Arr. Presenting cases of unusual oral and maxillofacial problems in the child patient.
90:229 Periodontic Literature Review I
Arr. Literature review of clinical research, treatment-related issues, diagnostic techniques, and pediatric periodontics.
90:239 Periodontic Literature Review II
Arr. Discussion of preventive orthodontics, periodontal therapy, and surgical methods as related to periodontics.
90:249 Periodontic Literature Review III
Arr. Discussion of infant management, prevention-conservative techniques, multidisciplinary care for the handicapped child.
90:259 Periodontic Literature Review IV
Arr. Discussion of current responsibilities and practice management, hospital affiliations, and advanced pharmacology for periodontics.
90:259 Dental Management of the Handicapped Child
Arr. Principles and techniques for managing various handicapping conditions of children in the dental office.
90:269 Research in Periodontology
Arr. Research in periodontology.
90:271 Thesis Preparation
Arr. Preparation of original research project and completion of thesis.
90:280 Advanced Clinical Periodontology
Arr. Comprehensive clinical management of pediatric patients in areas of preventive orthodontics, operative therapy, periodontics, and other oral surgery.
90:301 Pediatric Physical Diagnoses for Dental Practice
1 s.h.
Principles and techniques for making a physical evaluation of the child.
90:303 Pediatric Therapeutics for Dental Practitioners
1 s.h.
Principles of therapy in various disease entities.
90:304 Pediatric Hospital Rehabilitation
Arr. Comprehensive dental management under general anesthesia.
90:304 Pediatric Hospital Rehabilitation
Arr. Comprehensive dental care for the child in the hospital setting.
90:306 Procedures Teaching in Pedodontics
Arr. Observation and practice in current teaching procedures.

Pedodontics

Department head: Philip A. Luton
Faculty: C. Edward Blume, Phillip A. Luton, and C. McDonald associate professors William R. Gately, Charles R. Haskins, and Charles W. Haskins, PhD. J. A. Ball, F. P. Frisco, P. P. Gheorghe, P. L. C. Head, and B. C. R. Head, 91.5 s.h. Degree offered: M.S. (certificates also offered)

Preclinical Program
The Department of Pedodontics is concerned with the diagnosis, prevention, and treatment of periodontal disease. A program of instruction combining didactic, laboratory, and clinical experience is given to the preclinical student. Emphasis is placed on applying the biological concepts of periodontology to the comprehensive clinical management of patients who have periodontal disease.

Master of Science Program
The Master of Science program is designed primarily to provide training for research, research and specialization in periodontology. In compliance with the regulations of the Graduate College for programs of higher education in dentistry, and to meet all the requirements of the American Board of Periodontology for eligibility for certification, the following requirements must be met:

Satisfactory completion of a minimum of 60 semester hours of the required and elective courses, preparation and defense of an acceptable thesis based on original research requiring 11 semester hours of research and three semester hours of thesis preparation; and
Satisfactory completion of a comprehensive written and oral examination.

Completion of the program will usually require a minimum of 26 calendar months of full-time study.

Certification Program
The certification program is designed to meet all the requirements of the American Board of Periodontology for eligibility for certification. The program provides a sound foundation for the clinical practice of periodontology.
Completion of the program will require 24 calendar months of full-time study, and will require:
Satisfactory completion of a minimum of 60 semester hours of the required and elective courses;
Satisfactory completion of a comprehensive written and oral examination; and
An acceptable literature review paper.
Opportunities are provided for experience in clinical and basic research.

Facilities
The department has 20 modern and well-equipped operatories devoted exclusively to periodontics and access to hospital experience in all areas of University and V.A. Hospitals. Research facilities include a departmental research laboratory and collaboration laboratories in the areas of Histology and Histochemistry, Microbiology and Immunology, Electron Microscopy with EM and X-ray capabilities and Growth and Development. These collaborative facilities are in addition to those available by arrangement in the University and V.A. Hospitals and the basic science departments.

Financial Aid
The applicant must be financially prepared to undertake unanticipated study expenses. Assistantships are offered dependent upon available resources.

Admission
Admission requires the D.D.S. degree or its equivalent, and satisfactory examination of Graduate College requirements. Interviews are encouraged but not mandatory.

Preclinical Courses
90:200 Introduction to Periodontology 2 s.h.
Lecture and laboratory course devoted to basic concepts of periodontology for the dental hygiene.
90:201 Periodontal Methods 2 s.h.
Pedagogical concepts of periodontology, presented in a self-paced, slide-tape lecture series augmented by laboratory and clinical experience.
90:202 Periodontology 3 s.h.
Comprehensive clinical management of the periodontal patient.
90:168 Periodontology 1 s.h.
Comprehensive concepts of periodontology and the clinical management of patients are presented by lecture and seminar topic.
111:201 Literature Review in Preventive and Community Dentistry

Review of literature on assigned subjects. Major guidelines of individual faculty members and through scheduled sections at which papers are presented. Written reports including a critical review of literature and annotated bibliography required in at least one main area.

111:203 Practicum: Teaching Preventive and Community Dentistry

Practical experience gained by preparing course objectives and evaluation procedures, preparing lectures, holding tutorials and supervising field experiences for undergraduate students.

111:220 Research Seminar in Community Dentistry

Seminar in which principles of experimental design are studied. Objectives and philosophy of science, including rules of hypothesis in research and criteria for establishing validity hypotheses, individual work on formulation of research problems and research setting.

111:222 Independent Study in Preventive and Community Dentistry

Individual study in an area of special interest to student and approved by faculty supervisor; study design, procedures and results reported in paper.

111:224 Epidemiology of Dental Diseases

Study of the factors affecting the incidence and prevalence of oral and maxillofacial diseases. An introduction to the principles and methods of epidemiology.

111:226 Problems in Preventive and Community Dentistry

Selected problems in preventive and community dentistry presented in class. These problems may be of current or historical interest.

111:228 Field Experience in Community Dentistry

Field experience in community dentistry, including the opportunity to observe the practice of dentistry in the community.

111:211 Thesis: Preventive and Community Dentistry

Thesis research and writing in area of community or preventive dentistry.

111:223 Statistical Methods in the Biomedical Sciences

Statistical methods and concepts particularly appropriate for biological research topics include descriptive methods, elementary probability, distribution, estimation, hypothesis testing and sample size determination. Methods for analyzing percentage data and paired and repeated measure data are discussed. Methods for regression and correlation and analysis of variance are presented.

Removable Prosthodontics

Department head: Boris R. Sandor


Degree offered: M.S.

Removable prosthodontics is the specialty of dentistry involving complete dentures and removable partial dentures.

The preclinical program provides the student with the basic principles, procedures and concepts of removable prosthodontics required for the preclinical general dentistry. This is accomplished through laboratory projects and treatment of patients with different prosthodontic needs.

The Master of Science degree program 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 graduation to the Graduate College. In addition, the student must hold a D.D.S. or D.M.D. degree or its foreign equivalent. No advanced GRE is required.

Courses

861:10 Removable Prosthodontic Technique Lecture

Technique procedures in complete denture construction and removable partial dentures.

861:10 Removable Prosthodontic Technique Laboratory

Laboratory exercises in construction of complete and removable partial dentures.

861:130 Prosthodontic Materials Laboratory

Theory and manipulation of denture materials with basic applications.

861:180 Removable Prosthodontics

Clinical aspects of removable prosthodontics. Clinical and laboratory exercises in complete and removable partial dentures.

861:228 Complete Denture Seminar I

Review of current research in principles, practices and concepts of complete dentures construction.

861:228 Removable Partial Denture Seminar I

Review of current research in principles, practices and concepts of removable partial dentures construction.

861:227 Complete Denture Seminar II

Review of past research in principles, practices and concepts of complete dentures construction.

861:226 Removable Partial Denture Seminar II

Review of past research in principles, practices and concepts of removable partial dentures construction.

861:290 Research: Removable Prosthodontics

Literature reviews, protocol preparation and data collection for selected research projects.

861:322 Thesis Preparation: Removable Prosthodontics

Preparation and defense of thesis from research project.

861:322 Advanced Clinical Prosthodontics

Clinical treatment of patients requiring complete and removable partial dentures.

861:184 Removable Prosthodontics Lab

Removable Prosthodontics Lab

 Assigned problems involving minimally invasive procedures in construction of complete and removable partial dentures.

861:301 Practice Teaching: Removable Prosthodontics

Clinical and classroom teaching experience supervised by advisor.

841:600 Journal Club

Review of current literature in prosthodontics.

841:691 Library Assignment: Removable Prosthodontics

Discussion of assigned readings that are considered essential to removable prosthodontic literature.
The first permanent college-level department of education in the United States was established at The University of Iowa in 1872. The department became the School of Education in 1907 and the College of Education, structured in the basic pattern which governs it today, was founded in 1913. The growth of the College has corresponded to the growth of the University.

The College has eight divisions: Post-Secondary and Continuing Education; Educational Administration; Early Childhood and Elementary Education; Educational Psychology, Measurement and Statistics; Secondary Education; Counselor Education; Special Education; and Instructional Design and Technology.

The University is accredited by the National Council for Accreditation of Teacher Education (NCATE) for the preparation of elementary and secondary teachers and other professional school personnel, with the doctorate the highest degree approved.

Teacher Education Programs

The College of Education offers undergraduate programs in teacher education leading to certification in early childhood and elementary teaching, secondary school teaching, teaching in special education for mentally retarded and physically handicapped children, and health occupations education.

Admissions

Students who are interested in becoming teachers should indicate their proposed teaching major on the Application for Admission to The University of Iowa. Students who decline to enter the Teacher Education Program (T.E.P.) must declare the appropriate teaching major as their major in the College of Liberal Arts Advisory Office, 116 Schaeffer Hall, and submit an Application for Admission to the Teacher Education Program to the Office of Admission.

Students must complete the academic year in which they apply for admission to the Teacher Education Program. Applications received after that date will be approved only if faculty and program resources permit.

General Information

Students admitted to the T.E.P. are degree candidates in the College of Liberal Arts or College of Business Administration and must complete the requirements for the Bachelor of Arts, Bachelor of Science, or Bachelor of General Studies degrees as explained in those college's sections of the University Catalog. Policies, rules and regulations of these colleges apply to students in the T.E.P.

Students seeking the B.S. degree should especially note that a maximum of 40 semester hours of credit earned in the College of Education may be applied toward the degree.

Grade-Point Average

Although freshmen are admitted in the T.E.P., students are not eligible to enroll in professional education courses before they have completed 28 semester hours. The academic records of all students admitted to the T.E.P. will be reviewed at the end of each semester and students who have not maintained a 2.20 G.P.A. on all coursework attempted and on all University of Iowa coursework will be dropped from the T.E.P. Students who are dropped from the T.E.P. may reapply and may be re-admitted when the required 2.20 G.P.A. is achieved, if enrollment limits have not been reached.

Limitations on Enrollments

Because of the limits of faculty and teaching stations, it may be necessary to restrict enrollments in early childhood education, elementary education, special education and in social studies and English in secondary education. In the event that the number of T.E.P. applicants exceeds the capacity of a program, students will be selected by rank order on the criteria established by the faculty.

Admission Requirements

Undergraduate students must satisfy the following conditions before they will be admitted to foundations courses in education:

Have been admitted to The University of Iowa as a degree candidate;
Have completed the American College Testing Program;
Be free of any health impairment or physical handicap which will preclude teaching success;
Have attained sophomore standing (26 semester hours) prior to the semester during which he or she seeks to enroll in the foundations of education sequence of courses;
Have achieved a 2.20 grade-point average on all college coursework attempted and coursework completed at The University of Iowa;
Have submitted an Application for Admission to the Teacher Education Program (see date, above).

Graduate students must satisfy the following conditions:

Admission to the Graduate College:
Have a cumulative grade-point average of not less than 2.50 (2.70 for M.A.T.) on undergraduate coursework;
Admission to a specific certification program (e.g., elementary education, special education or secondary English).
American government before a certificate can be renewed. Students are, therefore, encouraged to include such a course in their pre-service programs. The following courses will satisfy the requirement:

American Government
30:001 Introduction to American Politics 4 s.h.
30:100 The American Political System 4 s.h.
( Either course may also be used to satisfy up to four semester hours of the social science core requirement of the College of Liberal Arts.)

American History
16:061 American History, 1492-1777 3 s.h.
16:062 American History, 1777-Present 3 s.h.
16:161 The Colonial Period in America 3 s.h.
16:162 American Revolution Period, 1740-1789 3 s.h.
16:163 United States in the Middle Period, 1789-1840 3 s.h.
16:164 United States in the Middle Period 1840-1877 3 s.h.
16:167 The Contemporary United States, 1920-1940 3 s.h.
16:168 The Contemporary United States, 1940-Present 3 s.h.

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 advancement 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. Since enrollment is early childhood education, 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 requirements for positions other than as a teacher (i.e., counselor, administrator or curriculum specialist) and who meet basic requirements and need only a few courses to validate or update their
Bulletin
Prospective graduate students should write to the College of Education for its bulletin, Advanced Studies in Education, which provides specific information about the various programs, admission procedures and requirements, and rules and regulations.

Advanced Degree Programs
The following are the College of Education’s advanced degree offerings:

Counselor Education
School Counseling: M.A., Ed.S., Ph.D.
Rehabilitation Counseling: M.A., Ph.D.
College Student Personnel: M.A., Ed.S., Ph.D.
Counseling Psychology: Ph.D.

Educational Administration
Educational Administration: M.A., Ed.S., Ph.D.
Elementary Administration: M.A., Ed.S., Ph.D.
Secondary Administration: M.A., Ed.S., Ph.D.

Early Childhood and Elementary Education
Elementary Education: M.A., Ph.D.
Developmental Reading: M.A.
*Art Education: M.A., Ph.D.
*Math Education: M.A., Ph.D.
*Physical Education-Field House: M.A., Ed.S., Ph.D.
*Physical Education and Dance-Halsey Gymnasium: M.A., Ph.D.
*Science Education: M.S., Ed.S., Ph.D.

Educational Psychology, Measurement and Statistics
Educational Psychology: M.A., Ph.D.
Educational Measurement and Statistics: M.A., Ph.D.
Reading Disability: M.A.

Instructional Design and Technology
Instructional Design and Technology: M.A., Ed.S., Ph.D.

Post-Secondary and Continuing Education
Adult Education: M.A., Ph.D.
Higher Education: M.A., **Ed.S., Ph.D.

Secondary Education
Secondary School Curriculum: M.A., Ph.D.
*Art Education: M.A./M.A.T., Ph.D.
Business Education: M.A./M.A.T., Ph.D.
English Education: M.A./M.A.T., Ph.D.
Mathematics Education: M.A./M.A.T., Ph.D.
*Music Education: M.A., Ph.D.
*Physical Education-Field House: M.A., Ed.S., Ph.D.
*Physical Education and Dance-Halsey Gymnasium: M.A., Ph.D.
*Science Education: M.S./M.A.T., Ed.S., Ph.D.
Social Studies Education: M.A., Ph.D.

Special Education
Special Education and School Psychology: M.A., Ed.S., Ph.D.
Non-divisional Programs
Social Foundations: M.A., Ph.D.

**K-12 Program** are offered jointly through Early Childhood and Elementary Education and Secondary Education Divisions.

**Includes cooperative programs in teaching fields leading to certification for Community College teaching.**

The M.A.T. is also offered in the areas of French, German, home economics, and speech and drama.

Support Units and Special Resources

Center for Educational Experimentation, Development, and Evaluation

The Center assists in facilitating cooperative research, development and evaluation projects with participating school districts, colleges, and state and federal agencies. Programs include activities formerly administered through the Iowa Center for Research in School Administration and the Cooperative School Systems Program.

Computer-Based Education Lab

The Computer-Based Education Laboratory offers hardware and consulting support for computer applications and instructional development related to ongoing instruction of the College of Education.

Curriculum Laboratory

The Laboratory provides materials primarily for students and faculty members interested in curriculum problems. It is located in a convenient central location approximately 25,000 elementary and secondary textbooks, reference books, courses of study, bibliographies, pamphlets and non-print media such as filmstrips, games, records, etc. The Laboratory also houses a 17,000-volume youth collection.

Early Childhood Education Center

This facility provides pre-service, 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, filmstrips, super 8 films, thermofax, transparencies and other materials related to instructional development.

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. Graduate students 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 109,360 volumes. It provides books, periodicals, reference books, films, ERIC microfiche, tests and a reserved book room for students and faculty.

Instructional Activities for the Classroom Teacher

This is a cooperative program between the University of Iowa and the State Department of Public Instruction involving the whole state of Iowa. The purpose is to conduct an in-service program for all classroom teachers of the handicapped.

The Iowa Testing Programs

The Iowa Testing Staff develops standardized educational tests, such as the widely-used Iowa Test of Basic Skills and Iowa Test of Educational Development, for use in elementary and secondary schools. This Department also conducts research studies in educational measurement and evaluation, publishes brochures, sponsors lectures and symposia, provides consultative services to school systems, and provides training experience for graduate students in measurement and statistics.

North Central Association

Iowa is one of the 19 states included in the North Central Association (NCA) of Colleges and 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 elementary, 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 houses and supports the office of the chairman of the Iowa NCA State Committee.

Reading Clinic

The Reading Clinic makes possible investigations into the fundamental causes of reading deficiencies and experimentation with methods of overcoming these deficiencies. It provides opportunity for observation and practice in the diagnosis and teaching of severely retarded readers.

School Program for Emotionally Disturbed Children

This program is located in the child psychiatry unit of the University's Psychopathic Hospital. Children attending this school are residential patients in the child psychiatry unit. The Program is supported by the Psychopathic Hospital and directed by the College of Education. Opportunities are available for student teaching and praxis in school psychological services.

Statistical Laboratory

The Laboratory contains a variety of calculating equipment. It provides experience in the application of such equipment to the analysis of statistical data, and it provides facilities for the analysis of research.

Teacher Certification Services

Though each state has its own teacher certification requirements, a majority of state certification agencies have entered into an agreement to issue certificates to applicants who have completed ap-
proved teacher education programs in institutions accredited by the National Council for Accreditation of Teacher Education. The University of Iowa teacher education programs have been approved by the Council. Students planning to major in special education are advised to be certain they will be eligible for certification if they plan to teach in a state other than Iowa.

University Counseling Services

The facilities of the University Counseling Services are available to students in counseling psychology for research and practicum purposes.

University Hospital School

University Hospital School is a university-affiliated facility and, as such, it serves to provide a viable balance of direct services to developmentally disabled youngsters, interdisciplinary training activities for personnel and research projects into program development and effectiveness. The facility contains two unique but integrated service sections, a residential program for youngsters coming from throughout the State of Iowa who are physically disabled, and a day program for youngsters from surrounding school districts who are mentally retarded. In addition to providing direct services to developmentally disabled youngsters, the facility has two other closely related functions specified training for workers and trainees in all areas concerned with handicapped children, and clinical research pertaining to causes and prevention of handicapping conditions.

Placement of children into the facility is worked out cooperatively with parents, appropriate area education agencies and local school programs. The basic philosophy of the facility is to return children to their local community programs within the shortest possible time. This philosophy is reflected in the maintenance of cooperative ties with local community programs either through outreach activities for training, pre-placement and follow-up programs, or through the use of this facility.

The financial support of the facility is provided by local, state and federal sources.

Financial Aids

The College of Education maintains experimental research, and laboratory relationships with school systems and the University maintains schools for the physically handicapped, emotionally disturbed, and mentally retarded.

Other facilities providing graduate experience in research and practice include the Reading Clinic, Statistical Laboratory, Iowa Testing Program, and the Early Childhood Education Center. The College is served by a Curriculum Laboratory, Educational Media Laboratory, Computer Based Education Laboratory, and the Education-Psychology Library. These facilities provide faculty and students with opportunities for conducting research and developing new instructional techniques.

Persons interested in employment opportunities in these areas should contact the director of each facility and indicate their interests, their academic and experience records, and their career or degree goals at The University of Iowa. Positions as aides in Women's Residence Halls, or Men's Residence Halls also offer an opportunity for employment for graduate students.

Graduate Assistantships

Individual academic programs provide opportunities for teaching, research, or service assistantships as well as fellowships and related employment opportunities. However, not all programs have such opportunities available. Inquiries should be addressed to the chairperson of the division or to the director of the special program in an area in which the student believes he or she can provide service or achieve an outstanding academic record. If the student has applied for admission, his or her student file is available for review by those responsible for selecting the assistantship(s) for their programs. Appointments are normally, but not always, made from within the program area of the assistantship.

Application for Graduate Appointment

These awards provide partial payment of tuition fees for graduate students for the academic year, a semester, or the Summer Session. A grade-point average of at least 3.00 is required. These awards are normally awarded to students in Education who hold assistantships on College of Education or related budgets. Applications may be obtained from 205 Jefferson Building. Students who are eligible are required to register for a minimum of nine semester hours of credit for each semester or five semester hours for the Summer Session for which they expect to receive these tuition awards.

Applications are valid for the academic year and the Summer Session. New applications must be filed for awards beginning with the Fall Semester each year.

Special Research Assistantship Program

The Iowa Testing Programs and the Iowa Measurement Research Foundation provide sufficient funds to support a limited number of Special Research Assistantships in Education. Students admitted to pursuing any of the advanced degree programs offered by the College who are not otherwise employed by U.S. or Canadian citizens. The assistantships are for the academic year only, are renewable for a limited number of times, and, at the present, pay stipends of $4,500 for half-time work. Holders are assigned to work under the direction of a faculty member in a research capacity and must carry a study or personal research load of not less than nine, or more than 12, semester hours per semester. The appointments are renewable. All candidates must submit transcripts of college work completed (undergraduate as well as graduate), letters of recommendation, and scores on the Graduate Record Examination Aptitude Test. The application deadline must be filed in a special form which may be obtained from February 15, the College of Education, Selection Committee, 358 Lindquist Center for Measurement. The application deadline is February 1st of each year.

Loans and Outfitable Employment

Information about commercial and federal loans as well as part-time employment in the University and the community may be obtained from the Office of Student Financial Aids.

L. A. Van Dyke Student Loan Fund

This loan fund has been established by former advisors, colleagues and other friends of Associate Dean Emeritus L. A. Van Dyke in recognition of his significant contribution to education in the state and the nation. Available to candidates for a degree in Secondary Education with superior performance records as scholars and as
Social Foundations of Education
Coordinator: Robert Bealing
Faculty: professor Robert Bealing; associate professor William Duffy

The primary purpose of this program is to prepare college instructors in the broad areas of Social Foundations of Education. A master's degree in Social Foundations of Education is usually inadequate by itself; however, students who intend to pursue the Ph.D. in the area of Social Foundations of Education and who enter the program without a master's degree may find it desirable to work toward this degree. Course requirements for either degree will be tailored to the individual. Courses are listed below. Areas of study within this field are: (i) philosophy-sociology of education, (ii) history of education, and (iii) comparative education.

Admission Requirements
General requirements as stated for admission to a doctoral program in the Graduate College. Personal interview is desirable and may be required; social sciences, philosophy, or general humanities undergraduate and/or graduate emphasis and two years of teaching experience are strongly recommended. Student must maintain a 3.0 grade-point average in social foundations courses (79) to remain in the program.

Courses
Social Foundations and Comparative Education

TF-102 History of American Education 2-3 s.h.
Our educational thinking and action of past 300 years as they have contributed to today's schools in United States.

TF-108 European Schools 2-3 s.h.
Treatment of contemporary educational changes in five European nations; similarities and differences between social policies and plans in the USSR, Scandinavia, England and France.

TF-104 Education in Newly Developing Countries 2-3 s.h.
Problems and trends in education in selected areas and countries of Latin America, Africa and South Asia.

TF-127 History of Education 2-3 s.h.
Ideas and events of great educational contributors from earliest days to present; their influence on curriculum and method of teaching.

TF-117 Problems of Urban Education 2-3 s.h.
In-depth study of the social background of other cities in the United States. Problems and trends in education in selected areas and countries of Latin America, Africa and South Asia.

TF-118 Educational Sociology 2-3 s.h.
Survey of major social trends, influences and comparative views in American culture, analysis of National Developmental Records with special emphasis on history and curriculum, education and social change in United States.

TF-119 John Dewey and Education 2-3 s.h.
Dewey's philosophy of education and its impact on modern teachers, special emphasis on historical and contemporary issues in educational theory and practice.

TF-110 Sex Roles, Stereotyping and Socialization in Education 3-3 s.h.
Consideration of the past educational roles in stereotyping of sex: analysis of schools' reinforcement of sexual stereotyping and discussion of alternative approaches and strategies for change. Same as TC-140.

TF-193 Individual Instruction in Social Foundations and Comparative Education 3 s.h.
Prerequisite: consent of instructor.

TF-202 Seminar: Social Philosophies and American Higher Education 2 s.h.
Comparison and analysis of current social philosophies, educational issues and
practical influence on contemporary higher education. Prerequisite: consent of instructor.

77:204 American Contribution to Educational Philosophy 3 s.h.
American philosophy and its influence on American philosophy of education.

77:208 Chinese and Other Collectivist Educational Systems 2-6 s.h.
Present social, moral and political problems among societies in 15 contemporary nations exam-
ned, Soviet Union and People’s Republic of China serve as a basis for consideration of variations on a collectivist educational theme from Yugoslavia to Upper Mongolia to China.

77:301 Seminar: Value Problems in the Administration of American Education 3 s.h.
Philosophical and sociological ideas which underlie American systems for administra-
tion of public education. Investigation of various ideas as to place of both conformity and diversity in democratic society and democratic educational systems; contemporary issues used to provide focus for examination of these ideas. Same as TO-280.

77:405 Ph.D. Thesis 1-9 s.h.
Prerequisite: consent of instructor.

Interdisciplinary Courses

77:103 Facilitating Career Development in Schools 4 s.h.
Coursework framework for understanding work with students on job analysis and self-awareness of individual career; review of career information methods and use of community resources with applications. Fall and summer.

77:201 Current Issues in Education 2-6 s.h.
Seminar to explore innovations for educational practice of recent importance in field; participants evaluate means to move to group discussion; seminar design to provide opportunity for exchange of ideas among students and faculty from all divisions in College of Education.

77:342 Seminar: Psychology and Education of the Ornately Different 3 s.h.
Readings and discussions to understand the effects of intellect, intelligence and depriva-
tion on psychological development and school achievement combined with field projects of student’s choice. Prerequisite: consent of instructor.

Counselor Education
Chairperson: Albert B. Bond
Degrees offered: M.A., B.S., Ph.D.
The Division of Counselor Education is primarily involved in the training of practitioners and scholars at the graduate level. In addition, however, the division offers training in interviewing and interpersonal skills for students in other professional and graduate programs as well as some basic courses in those areas for undergraduates.

College Student Personal Administration and Counseling

M.S. in Arts Admission Requirements
No specific program of undergraduate study or work experience is required, although students considered inadequately prepared will be expected to arrange for course work courses while undergoing graduate study.
A personal interview is desirable, but not required.
Applications will ordinarily be expected to meet at least one of the following qualifications to be considered for the M.A. program.

A minimum undergraduate grade-point average of 3.06 or

A total score of at least 1,000 on the Graduate Record Exam-

A minimum score of 550 on one of the two aptitude portions of the Graduate Record Examination, or

Evidence of outstanding leadership in extracurricular activities at an undergraduate institution, or

Highly successful experience in the field

Candidates must also evidence an appropriate level of emotional, personality and interpersonal skills. Students admitted on an conditional basis will usually be required to earn a 3.00 G.P.A. to be admitted to regular status.

Ph.D. Admission Requirements
Completion of a master’s degree in counseling, student personal work or closely related area; 3.00 grade-point average; successful experience in college student personnel work or equivalent expe-

Ph.D. Admission Requirements
Same as minimum for Graduate College and M.A. program, and as follows:

Students admitted on conditional basis will usually be required to earn a 3.30 G.P.A. to be admitted to regular status.

The M.A. thesis or its equivalent is not necessary for admission to the Ph.D. program, but to take the Ph.D. comprehensive examination, the student must offer research evidence through his M.A. thesis or its equivalent.

Counseling Psychology

Ph.D. Admission Requirements
Preferably an undergraduate major or minor in psychology, or a major in some related field, G.P.A. of 3.00 or more; successful conditions for admission will typically have GRE (aptitude) scores of 1,150; letters of recommendation. In addition, a personal interview is required before final admission. All application materials must have been received by March 1 of each year; students will be notified about March 15 concerning their applic-

Ph.D. Admission Requirements
Same as minimum requirements for Graduate College. In addition, applicants who have recently graduated from an M.A. program in rehabilitation counseling, and who have not had at least one year of full-time work experience in rehabilitation
counseling, must submit a written explanation for not undertaking such work experience prior to admission to the doctoral program. Such work experience is viewed as highly desirable and applicants without such experience will receive lower priority than applicants with such experience. Applications are reviewed March 1 for fall admissions. M.A. basis or equivalent necessary.

School Counselor Education

M.A. Admission Requirements

In addition to the Graduate College's minimum requirements, the faculty of the School Counselor Education program requires a minimum undergraduate grade-point average of 2.50 and the completion of specific courses by the applicant and his/her reference. These forms will be sent by the Office of Student Personnel, College of Education.

Ed.S. Admission Requirements

To be admitted to the program, an applicant must possess a master's degree or its equivalent in counseling and have experience as a counselor. The applicant is also required to have a minimum grade-point average for all graduate study of 3.00 and complete the necessary forms (required by this program) which will be sent by the Office of Student Personnel, College of Education.

Ph.D. Admission Requirements

An applicant must demonstrate scholastic aptitude by meeting the minimum graduate grade-point average requirement of 3.25 and perform satisfactorily on the Graduate Record Examination. Also, an individual should possess a master's degree or its equivalent in a counseling area.

Special Program in Drug Counseling

A federally-funded program leading to a drug counseling specialty is available as a minor area along with other M.A. programs in counselor education.

Special Facilities

A wide variety of practicum experiences is available to students in the various programs in counselor education in a large number of settings in neighboring community agencies, schools and colleges as well as in many agencies throughout the university.

Financial Aid

Graduate training fellowships are available (dependent upon federal funding) for students entering the Rehabilitation Counseling and Drug Counseling programs. Many other graduate students in the Counseling Education Division hold a variety of part-time graduate assistantships. For example, many of the University's students serve with award part-time assistantships to graduate students in the College Student Personnel Program. Applicants for assistantships should contact the coordinator of the particular counselor education graduate program they plan to enter.

Courses

For Undergraduates and Graduates

Counseling and Guidance

7C/21: Making a Vocational-Educational Choice 2 s.h.

Directed toward those students who are uncertain about their educational and vocational goals, special emphasis given to the vocational decision-making process, self-evaluation and exploration of the world of work.

7C/29: Principles of Guidance 3 s.h.

Focus upon guidance procedures and practices and by classroom model in the content area of counseling to help children.

7C/49: Principles of Change and the Counselor 3 s.h.

Laboratory course involving open strategies other than one-to-one regulatoethical model in group counseling. Emphasis will be on decision-making process with children.

7C/11: Human Sexuality 1.25 s.h.

Exploration of physiological and psychological aspects of human sexuality. Some sex work included.

7C/15: Nature of Social Work 2.5 s.h.

Some discussion of the nature of social work as a profession. Emphasis will be on the nature of social work. Some sex work included.

7C/16: Sex Roles Stereotyping and Socialization in Education 3 s.h.

Consideration of the nature of social work as a profession. Emphasis will be on the nature of social work. Some sex work included.

7C/17: The Culturally Different in Educational Settings 3 s.h.

Consideration of the nature of social work as a profession. Emphasis will be on the nature of social work. Some sex work included.

7C/18: The Drug Counselor 3 s.h.

A consideration of the nature of social work as a profession. Emphasis will be on the nature of social work. Some sex work included.

7C/19: Educational Institutions in Counseling Undergraduate Education 3 s.h.

Consideration of the nature of social work as a profession. Emphasis will be on the nature of social work. Some sex work included.
Early Childhood and Elementary Education

Early Childhood and Elementary Education

Preparation: Jerry W. Kline

Graduate advisor: A.A., B.S., M.A., Ph.D.

The programs offered by the Division are designed to prepare graduates for employment in specific positional roles in public schools and institutions of higher learning. All programs have been approved by the Iowa Department of Public Instruction and meet National Council for Accreditation of Teacher Education approval standards.

Undergraduate Programs

Early Childhood Education

Early childhood teaching requires an understanding and appreciation of young children from infancy through the early elementary school years, and competence in encouraging and enhancing the growth and development of the total child.

Preparation for early childhood teaching involves study of child development, parent-child relationships, and organization and administration of child centers, in addition to curriculum and methodology appropriate for young children. The program involves wide reading, creative planning, and application of knowledge in working with groups of young children in public or private early childhood centers or classrooms. The early childhood education program is designed specifically to prepare students to teach children in infant-toddler groups, in classes for three-, four-, and five-year-old children, and in kindergarten, thus meeting the requirements of the Iowa education number 53 for nursery school/kindergarten teachers.

Students interested in dual certification at the nursery school/kindergarten level and the kindergarten/elementary level should follow the elementary education program with the early childhood area of specialization beginning in enrollment numbers 10 and 11.

Program Requirements

Special Core Requirements

Students desiring in Early Childhood, Elementary and/or Special Education should complete the special Science-Mathematics Foundation designed for them. Completion of this core requirement is a prerequisite to enrollment in 7E:162 Methods: Elementary School Mathematics. This core requirement may be satisfied in one of three ways:

1. Satisfactory completion of courses 97:55, 97:56, and 223:80; or
2. Satisfactory completion of equivalent courses as another four-year approved college or university; or
3. Prior to declaration of an education major and/or admission to a teacher education program, successful completion of The University of Iowa natural science core requirement and the passage of special tests dealing with the content of 97:55-97:56 and 223:80. Students not passing the science competency examination must register for 97:104. Students not passing the mathematics examinations must register for 223:80.

Foundations Courses

7P:75 Educational Psychology and Measurement 3 s.h.
7E:100 Introduction to Elementary and Early Childhood Teaching 2 s.h.
7V:101 Operation of Audio-Visual Equipment 1 s.h.

Undergraduate students should complete the Foundations Courses in their sophomore year. Graduate students may elect equivalent graduate-level courses with the approval of their advisors.

Major Courses

Minimum course requirements which must be completed before student teaching:

17:10 Growth and Development of the Young Child 3 s.h.
or
7P:106 Child Development 3 s.h.
or
31:14 Introduction to Child Psychology 3 s.h.
17:124 Nutrition Work with Children 3 s.h.
7E:120 Methods and Materials: Music for the Classroom Teacher 3 s.h.
7E:122 Methods and Materials: Art for the Classroom Teacher 3 s.h.
7E:126 Literature and Storytelling for Children 3 s.h.
7E:157 Methods: Early Childhood Education I 3 s.h.
7E:91 Pre-Education Practicum (to be taken concurrently with 7E:157) 1 s.h.
7E:157 Methods: Early Childhood Education II 3 s.h.
7E:91 Pre-Education Practicum (to be taken concurrently with 7E:157) 1 s.h.

Additional courses required to complete the Early Childhood Education major (may be taken before or after student teaching):

17:114 Parent-Child Relationships 3 s.h.
7U:133 The Culturally Diverse in Educational Settings 3 s.h.
42:125 Child Care Centers Development and Administration 3 s.h.

*Requires advance registration. See your adviser.
Student Teaching

Students should make application to the College of Education by March 15 preceding the academic year during which they plan to do their student teaching. Students register for 7E:158 Supervised Teaching in an Early Childhood Center. The student teaching period is one full semester for 15 semester hours of credit. No additional coursework may be taken during the student teaching semester.

Areas of Specialization

A minimum of three courses (or nine semester hours) from an area of specialization is required. The areas of specialization offered for early childhood education majors are child and family services, the family, child growth and development, language development, and educational needs of special children. The student should consult with his/her advisor concerning the choice of the area of specialization. Copies of the requirements for each area of specialization are available in the College of Education Office and at the Early Childhood and Elementary Education Division Office. Courses in the area of specialization may be taken pass/fail if this option is offered for them.

Elementary Education

Elementary teachers guide the learning experiences of children during the approximate age period 5-12 years. They serve in a variety of school organizational patterns including self-contained rooms wherein the teacher assumes responsibility for most of the curricular areas, departmental positions wherein their responsibilities are concentrated in one or two subject areas, and team teaching assignments wherein two or more teachers assume shared responsibility for the total instructional endeavor.

Preparation for elementary teaching involves: the acquisition of a general educational background, a depth study of at least one elementary curriculum subject area, and, professional study of the learning process, the selection and structure of curricular materials suitable for school age children, and of the methodological procedures most appropriate for presenting these materials. Study in the program is rigorous. It involves wide reading, creative planning and application of knowledge in the classroom. The elementary education program is designed specifically to prepare students to teach kindergarten through fifth 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.

Student Internship

Students interested in a bogus certification approval to teach art (approval number 34), music (approval number 60), or physical education (approval number 62) in grades K-9 must complete the requirements for the elementary education endorsement (number 10) and the appropriate Area of Specialization. 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

Special Core Requirements:
See description under Early Childhood Education.

Foundations Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>7E:91</td>
<td>Pre-Education Practicum or equivalent</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>7E:100</td>
<td>Involved: Elementary and Early Childhood Teaching</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>7P:75</td>
<td>Educational Psychology and Measurement</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>7Y:101</td>
<td>Operation of Audio-Visual Equipment</td>
<td>1 s.h.</td>
</tr>
</tbody>
</table>

Undergraduates should complete these in their sophomore year. Graduate students may elect equivalent graduate level courses with the approval of their advisors.

Methods Sequence

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>7E:160</td>
<td>Methods: Elementary School Language Arts</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>7E:161</td>
<td>Methods: Elementary School Social Studies</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>7E:162</td>
<td>Methods: Elementary School Science</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>7E:163</td>
<td>Methods: Elementary School Mathematics</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>7E:164</td>
<td>Methods: Elementary School Reading</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

The elementary methods sequence must be completed before the student will be eligible for student teaching.

Student Teaching

Students should make application to the College of Education by March 15 preceding the academic year during which they plan to do their student teaching. Students elect 7E:191 Supervised Teaching in an Elementary School or 7E:192 Laboratory Practice in Elementary School; 7U:191 Laboratory Practice in Education of the Physically Handicapped Child; 7U:192 Laboratory Practice in Education of the Mentally Retarded Child; and 7E:158 Supervised Teaching in an Early Childhood Center may also be elected where appropriate. The student teaching period is one full semester for 15 semester hours of credit. No additional coursework may be taken during the student teaching semester. No more than two certifiable student teaching experiences may be taken in a given semester.

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 advisor 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 of Education Office and at the Early Childhood and Elementary Education Division Office. Courses in the area of specialization may be taken pass/fail if this option is offered for them.
Graduate Programs

M.A. in Elementary Education
This degree program, which may be taken with (30 s.h. minimum) or without (32 s.h. minimum) thesis, is designed to prepare master elementary teachers capable of serving as team leaders, grade level or subject area supervisors, or curriculum consultants. Successful completion of this degree together with four years successful teaching experience qualifies the student for certification as an elementary school supervisor. Iowa endorsement number twelve.

Only one course, 7E:300 Elementary Curriculum, is specifically required of all candidates but each candidate must elect at least one course from each of the domain areas: Social Foundations, Educational Psychology and Measurement, and Supervision. In addition, each candidate must complete an area of specialization and selected course work in advanced methodology.

M.S. in Elementary Science
This degree program, which may be taken with (30 s.h., minimum) or without (34 s.h., minimum) thesis, is designed to prepare master elementary science teachers capable of serving as team or departmental science specialists. The admission requirements are the same as those established by the Graduate College and, in addition, the applicant must have completed an undergraduate program of teacher preparation equivalent to that required for Iowa Elementary Teaching endorsement number ten. Prior to completion of the degree, the applicant must have one year of successful teaching experience.

Four courses are required of all candidates:

7E:302 The Science Curriculum in the Elementary School 2-3 s.h.
7E:262 Advanced Techniques of Teaching Science in the Elementary School 3 s.h.
7E:530 Seminar: Science Education 1 s.h.
7E:562 Current Readings in Science Education 2 s.h.

In addition, all candidates must complete coursework in at least two science areas. A minimum of ten semester hours must be completed in one science area.

M.A. in Developmental Reading
This program, which may be taken with (30 s.h., minimum) or without (32 s.h., minimum) thesis, is designed to prepare graduate students for positions as reading specialists in Kindergartens and grades 1-12. Successful completion of this program, together with four years successful teaching experience, qualifies the student for certification as a Reading Specialist, Iowa endorsement number 54.

Four courses are required of all candidates:

7E:264 Building Foundations for Reading: Pre-primary and Primary 2-3 s.h.
7E:265 Supervision of Intermediate Grade Reading 3 s.h.
7E:304 Seminar: Elementary Reading 2-3 s.h.
7E:184 Methods: Reading in Secondary School 2-3 s.h.

In addition, candidates must complete one or more courses each in the Social Foundations and the Elementary School Curriculum and Supervision areas. In consultation with the major advisor, the student selects additional courses appropriate to his or her background.

Ph.D. in Elementary Education
The purpose of this program is to prepare students for college and university teaching and research positions in elementary education and for research, curriculum, supervisory, or administrative positions in public school systems and governmental educational agencies. A minimum of 90 semester hours, including hours earned for the dissertation, are required. The plan of study for each student is prepared on an individual basis in consultation with an advisor. The final plan of study must be approved by the advisor and the Division chairperson. As a general guideline, each student is expected to have a good general background in all facets of elementary school education and a very strong area of specialization in at least one facet. Commonly selected specialization areas are: Elementary School Administration, Children's Literature, Elementary Childhood, Curriculum, Language Arts, Mathematics, Reading, and Social Studies.

Each doctoral student must also complete a comprehensive field of concentration. The external field may be a professional specialization such as Educational Psychology and Measurement, Special Education, or General School Administration; or, it may be a subject field, such as English.

In addition, all students must demonstrate competency with respect to appropriate research tools, most commonly Statistical Analysis and Data Processing.

Financial Assistance
A number of teaching assistantships are available for graduate students pursuing advanced programs in early childhood and elementary education. Specific assignments vary. Some assistantships involve teaching in the Early Childhood Education Center; some involve the supervision of undergraduates majoring in 7E:59 Pre-Kindergarten Education; and some involve the teaching of sections of undergraduate methods courses and the supervision of student teachers. Most assistantships are classified as one-half time. This classification permits students to register for a maximum of 12 semester hours of credit per semester.

holders of assistantships must register for a minimum of nine semester hours per semester.

All assistantships are awarded on a competitive basis. To be considered for an assistantship an applicant must have been admitted on regular status to the Graduate College and have been accepted to an advanced program by the College of Education.

Inquiries concerning assistantships should be directed to the Division chairperson.

Courses
7E:271 Methods and Materials: Elementary School Physical Education 3 s.h.
7E:272 Methods and Materials: Elementary School Physical Education 3 s.h.

For physical education majors only. Some as Physical Education for Women 27.72.
7E:272 Methods and Materials: Elementary School Physical Education 3 s.h.

For physical education majors only. Prerequisite: 7E:71 or consent of instructor.
Some as Physical Education for Women 27.72.
7E:272 Physical Education Prerequisite 1-2 s.h.

The prerequisites involve working with children and teachers in elementary schools and early childhood centers for at least ten hours per week for each semester hour of
TE.241 Physical Education for the Elementary School
2.5 a.h.
Primary for grades K-6. Classroom teachers and supervisors. Includes discussion of program development, modern methodology (including movement education), assessment of curriculum, curriculum development, the role of the teacher in the assessment and evaluation process. Same as Physical Education for Men 27:120.

TE.242 Supervision and Curriculum Development in Art Education
3 a.h.
Problems and responsibilities of art supervisor including curriculum, facilities, financing, supervision, interdepartmental planning, standards, policy level problem solving and evaluation. Same as Art Education for Men 27:120.

TE.243 General Music in the Elementary School
2 a.h.
Theory of curriculum development, instructional materials, analysis of current teaching methods and techniques.

TE.244 Problems of Experimental Design in Science Education
3 a.h.
Special research projects; school situations utilized as experimental design variables; pilot studies, small scale techniques of research at this level practical; for graduate students interest in evaluative techniques. Required of all beginning graduate students at this level for their thesis or as an added option. Same as 27:143 and 27:145.

TE.250 Program and Research Problems in Science Education
3 a.h.
Same as 27:125.

TE.240 Supervision of Elementary School Language Arts
3 a.h.
Explores curriculum models, curriculum development processes, methodology and materials for an elementary school language arts program; emphasis on process evaluation through creative dramatics and writing, developing understanding concerning language, language development processes and skills of effective oral and written communication. For experienced teachers, curriculum personnel and those specializing in language arts.

TE.251 Supervision of Elementary School Social Studies
2.5 a.h.
Curriculum content and for consideration of modern curriculum concepts; cooperation in planning assignments, provision for individual differences and functional development of study skills.

TE.255 Advanced Techniques of Teaching Science in the Elementary School
3 a.h.
Theory of teaching science at elementary school level; emphasis upon procedures which enable implementation of modern philosophies chararacterizing elementary school science education; primarily for experienced elementary teachers progressing toward graduate degrees; graduate students in science education may also find complimentary experience.

TE.252 Supervision of Elementary School Mathematics
3 a.h.
Comprehensive analysis of mathematics, training in modern teaching and learning, use of proof, drill, research, selection and evaluation of arithmetic course.

TE.256 Building Foundations for Reading: Pre-primary and Primary
2.5 a.h.
Understanding of early reading experiences; relationship of reading to other curriculum areas; teaching of phonics, reading, creative writing, curriculum materials and assessment procedures; organizational patterns for instruction; interaction among reading, writing, listening, speaking and thinking; development of common and crucial issues; knowledge of pertinent research.

TE.257 Supervision of Elementary School Reading Grades 1-3
3 a.h.
For teachers, principals and supervisors; reading with comprehension, provision for individual differences; reading in social studies, science, integrated materials and assessment procedures; organizational patterns for instruction; interaction among reading, writing, listening, speaking and thinking; development of common and crucial issues; knowledge of pertinent research.

TE.258 Improvement of Instruction in Primary Education
2.5 a.h.
Curricular and current problems in selection and organization of curriculum and instruction. Change of emphasis in elementary schools.

TE.259 Supervision and Curriculum Development in Pre-primary Education
3 a.h.
Major issues in the selection and organization of pre-primary instructional programs in science, social studies, art, music, physical education, health, etc.

TE.260 Direction of Student Teachers and Assistant Personnel
3 a.h.
For teachers, supervisors and principal: analysis of techniques and strategies for supervising student teachers; review of techniques for utilizing volunteer and paid student teachers.

TE.252 Use of the Inquiry Method in the Elementary Grades
3 a.h.
The theory in development of science curriculum and methods utilized in the Inquiry approach. A workshop is made of learning theory and classroom management skills as developed during the Inquiry method. Considerable attention will be given to mastery of specific teaching techniques needed to maximize the theory into practice. Specifically designed for in-service teachers.

TE.260 Individual Instruction in Elementary Education
3 a.h.

TE.230 Elementary Curriculum
3 a.h.

TE.270 Reading Clinic: Supervision
3 a.h.

TE.251 Seminar: History and Theory of Early Childhood Education
3 a.h.
Analysis of historical and theoretical developments of early childhood education with emphasis on current theories.

TE.272 The Science Curriculum in the Elementary School
3 a.h.
Analysis of major science series and curriculum materials; resources and the nature and structure of science instruction; relationships of science to other subjects; implementation of instructional equipment; selection of instructional materials in science; basic requirement in supervision and administration.

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TE.251 Seminar: History and Theory of Early Childhood Education
3 a.h.
Analysis of historical and theoretical developments of early childhood education with emphasis on current theories.
7E.801 Observation and Analysis of Instructional Practice 2-3 s.h.
Observation of elementary school instruction: principles and critical analysis.
7E.804 Laboratory Practice in Supervision 2 s.h.
Individually planned supervised experiences in a variety of supervisory roles: T&O.
7E.805 Practicum in Directed Teaching 2 s.h.
Practicum: content is variable.
7E.806 Special Problems in Science Education 3-4 s.h.
Individual research projects which may involve thesis for advanced students; research on teaching science for high school teachers.
7E.807 Practicum in Science Education 2 s.h.
Practicum: content is variable.
7E.808 Field Service Project in Elementary Education 2 s.h.
Practicum: content is variable.
7E.809 M.A. Thesis in Elementary Education 2-3 s.h.
Preliminary content is variable.
7E.810 Educational Specialized Research in Elementary Education 4-6 s.h.
Preliminary content is variable.
7E.811 Seminar: Child Art and Art Education 3-6 s.h.
Analysis and evaluation of current concepts of child art and child development, perception, creativity and art education; historical development of educational art; child development and art education. Same as T&O.605.
7E.812 Research in Art Education 2 s.h.
Individual research under supervision; application of these principles and to doctoral dissertation development. May be repeated for credit.
7E.813 Ph.D. Thesis in Elementary Education 2 s.h.
Practicum: content is variable.

Educational Administration

Graduate Programs: To be named
Degree offered: M.A., Ed.D., Ph.D.

M.A. in Educational Administration

The purpose of this program is to prepare students for appointment at the elementary or secondary school principal, central staff, certain positions with state department of education, or appointments with educational agencies. The thesis program is recommended for students who plan to do graduate work in an advanced degree or who have a special interest in educational administration. Persons who wish to be certified as an elementary or secondary school principal must have had four years of teaching experience on a valid teacher's certificate. Within certification guidelines, programs are developed to meet the individual emphasis of the student.

Ed. S. in Educational Administration

The purpose of this program is to prepare students for appointments at superintendents of schools, in state departments of education, state education agencies, or the U.S. Office of Education and to assist school administrators in upgrading their administrative skills. Persons who wish to be certified as an elementary or secondary principal or superintendent of schools must have had four years of teaching experience on a valid teacher's certificate. Within certification guidelines, programs are developed to meet the individual emphasis of the student.

Ph.D. in Educational Administration

The purpose of this program is to prepare students for positions at all levels of school administration or to teach educational administration at the college level or university level.

Courses

Educational Administration

7E.811 Foundations of School Administration 3 s.h.
The roles of in-school administration; emphasis on processes common to all phases of educational administration; conceptual framework for administration of educational needs and its use in securing desirable learning conditions, decision-making, and organizational theory.

7E.813 Computer Applications in Education 3 s.h.
Principles of educational data processing and computer with emphasis on educational administration, instructional and research.

7D.804 Systematic Administration and Operations Research 3 s.h.
Application of system analysis and operations research methods in educational planning and decision-making; methods include linear programming, queuing, decision tables, strategies, gaming, and networks.

7D.805 Secondary School Administration 3 s.h.
Rules and responsibilities of secondary school administrators in planning and implementing the educational program, staff activities, utilization and improvement, providing appropriate student personnel services and the direction of management opportunities.

7D.811 Elementary School (Principal) 3 s.h.
Organization, supervision, and administration of elementary schools, curriculum leadership, instructional practice and personnel relationship; role analysis and charting of characteristics required in elementary school program.

7D.812 Elementary School Organizational Patterns 3 s.h.
Organizational approach analyzed with specific attention devoted to entering patterns; emphasis given to new trends in instructional procedures.

7E.813 Systems Evaluation in Educational Decision-Making 3 s.h.
Development of techniques, processes and mechanisms of evaluation and design; current and emerging trends in educational research.

7D.814 School-Public Relations 3 s.h.
Relationships between public school as social institution and community; basic concepts, programs and democratic process, agents of incorporation, means of emphasis on field work.

7D.815 Administration of Professional Personnel 3 s.h.
Problems of appointment, employment, evaluation, inservice development, salary and welfare policies influencing professional personnel of schools.

7D.816 School Budgeting Systems 3 s.h.
Comprehensive study of planning of educational facilities, the classification and use of income and resources, the evaluation of educational programs and the design and construction of educational facilities.

7D.817 State and Federal Planning of Public Education 3 s.h.
Economic implications of public education; determination of policy and practice in financing of public schools by local, state and federal agents; development and programs of state and federal schools.

7D.818 Financial Management, M.S. in School Administration 3 s.h.
State and federal school systems. Overview of school business administration and role of school business officer.

7D.819 Educational Measures 3 s.h.
Uses and abuses of educational measures in curriculum development; modern educational techniques and statistical methods.

7D.820 Theory of Administration 3 s.h.
Administration: principles, leadership and organizational behavior in educational administration; developing financial constraints in the description, analysis and methodology of administrative behavior.

7D.821 Legal Aspects of School Personnel 3 s.h.
Administrative practice: employment, personnel, collective bargaining, personnel practices and procedures, personnel rights and responsibilities, school processes, educational transactions, and legal aspects.
dary education. Recommended areas from which other electives may be chosen include Educational Psychology, Statistical Methods, Educational Measurement, Computer Programming and Data Processing, Mathematical Statistics, Counseling and Guidance, Special Education and Mathematics.

Candidates must write comprehensive examinations covering the fields of Educational Measurement and Applied Statistics. They may also opt to write a third comprehensive examination covering Educational Psychology or an approved substitute, in which case the coverage of the examinations will be somewhat less comprehensive.

M.A. in Reading Disability

Only a non-thesis (32 s.h. minimum) program is available in this area. The purpose of the program is to provide training in the diagnostic teaching of reading leading to endorsement (certification) as a Reading Clinician. Graduates may return to classroom teaching or serve as reading clinicians, resource teachers, or consultants.

The admission requirements are the same as those established by the Graduate College, except for the added requirement of two years of successful teaching experience.

All candidates are required to complete a common core of courses totaling 16 semester hours. Courses included in this core are:

7P: 170 Psychology of Reading 3 s.h.
7P: 273 Reading Clinic: Diagnosis 2.5 s.h.
7P: 150 Educational Measurement for the Classroom Teacher 3 s.h.
7U: 251 Individual Intelligece Testing 3.5 s.h.
7U: 244 Introduction to Behavior Disorders/ Learning Disabilities 3 s.h.

In addition, each candidate must complete at least five semester hours of curriculum-specific courses chosen from an approved combination of:

7E: 365 Reading Clinic: Supervision 3 s.h.
8P: 370 Teaching in a Reading Laboratory 3 s.h.

Elective courses (11 s.h. minimum) may be chosen from such fields as Speech Pathology and Audiology, Elementary and/or Secondary School Literature and Language Arts, Educational Psychology, and Elementary and/or Secondary School Curriculum.

All students are required either to write a three-hour comprehensive examination in Reading Disability and two 90-minute comprehensive examinations in related fields, or to take an experience-type comprehensive examination involving the investigation of a reading problem such as would be encountered by a reading clinician or consultant in the field.

Ph.D. in Educational Psychology

The purpose of this program is to prepare training that will qualify graduates to teach and to conduct research in educational psychology.

The admission requirements are the same as those established by the Graduate College, except that if the candidate's GRE total score is less than 1000 or if other evidence (GPA, academic preparation, and experiences demonstrate that the admission will be conditional. Teaching experience is highly desirable but not required for admission. Qualified candidates who do not hold M.A. degrees will be admitted to the M.A. with thesis program and expected to earn that degree prior to formal acceptance into the Ph.D. program.

A minimum of 32 s.h. is required for the Ph.D. degree, but few students are able to qualify for graduation with this minimal amount of formal training. The typical student finds it necessary to earn 30 or more semester hours of credit to satisfy the degree requirements.

Specific minimal course requirements (26 s.h.) include 15 s.h. of statistics and research methodology, including at least one course in educational or psychological measurement, plus three courses (9 s.h.) from the general areas of Teaching and Learning Developmental Processes, with at least one of these courses being from each area.

The balance of the student's course program is planned by the student and his adviser and may be tailored to enable the student to pursue his personal goals and interests.

The written comprehensive examinations (see above) are given after three or more years from the admission date, and no student is permitted to take the comprehensive examinations unless he has completed at least one year of professional experience in teaching or related fields is highly desirable. Qualified candidates who do not hold M.A. degrees will be admitted to the M.A. with thesis program and expected to earn that degree prior to formal acceptance into the Ph.D. program.

While a minimum of 32 s.h. is required, there are no specific course requirements beyond those required for the M.A. degree. The program of study is jointly planned by the student and his adviser during the first year, and it is tailored to meet the individual goals and interests of the student. Typical programs include advanced work in educational measurement, evaluation, and scaling; classical and Bayesian methods of data analysis; research methodology and the planning of experiments; and educational psychology.

Students who concentrate in the area of statistics are expected to take advanced work in mathematical statistics. Those who concentrate in the area of educational measurement and
enrollment will be advised to take appropriate courses in curricu-

The written comprehensive examinations normally involve 

The dissertation topic (12 to 16 a. h. may be exempted in the form 

The final requirement consists of an oral defense of the com-

Other Possible Degree Programs

Ph.D. In Educational Psychology with Concentration In Reading Disability

Students are expected to meet the admission and degree require-

Students are expected to meet the admission and degree require-

Ph.D. Program In Educational Psychology With Concentration In Instructional Design

Students are expected to meet the admission and degree require-

Financial Aids

The Division normally employs two graduate students as teaching 

There are also a few other assistantships supported by the Iowa 

TP-72 Educational Psychology and Measurement

TP-102 Learner Characteristics

TP-108 Child Development

TP-116 Personality and Mental Hygiene

TP-119 Socialization of the School-Age Child

TP-123 The Adolescence and Young Adult

TP-128 Introduction to Programmed Learning

TP-138 Computers In Education

TP-139 Introduction to Instructional Design

TP-140 Educational Measurement for the Classroom Teacher

TP-172 Development of Reading

TP-191 Introduction to Theories of Learning

TP-192 Cognitive Development in Children: An Introduction to Piaget

TP-193 Special Readings and Projects
Programs can be planned in such a way as to lead to the media specialist endorsement to a teaching certificate (endorsement 39).

M.A. Program

Minimum total semester hours required: 35 s.h.

Purpose: To provide a basic background in Instructional Design and Technology for classroom teachers or for those who plan careers as instructional designers and technologists in education, business or industry. May be taken with or without thesis.

Admission: A minimum g.p.a. of 2.50 on all previous course work and a composite GRE (Quantitative plus Verbal) of at least 1000 are required for regular admission. Students with GRE composites of less than 1000 and grade-point averages below 2.50 may be admitted conditionally. Teaching or relevant work experience may be helpful.

Ed.S. Program

Minimum total semester hours required: 60 s.h.

Purpose: To provide specialized training in Instructional Design and Technology beyond that attained in the M.A. program.

Admission: Same as for M.A., except that a minimum g.p.a. of 2.70 on all previous graduate work is required for regular admission.

Ph.D. Program

Minimum total semester hours required: 90 s.h.

Purpose: To provide a broad background for students interested in teaching, research and leadership positions in the field of Instructional Design and Technology. There is a relatively heavy emphasis in this program on helping the student acquire the knowledge and skills necessary to expand our understanding of learning and instruction and those factors which influence them.

Admission: Same as for Ed.S., except that a minimum grade-point average of 3.00 on all previous graduate work is required for regular admission.

Courses

TV/102 Operation of Audio-Visual Equipment

Principles and practice of operating and maintaining picture projectors; audio and video tape recorders, sound recorders, special effects, closed circuit television, the dry-erase board and intercom systems.

TV/106 Television and Utilization of Educational Media

Primarily for students expecting to teach, but open to non-teaching majors; provides experiences in planning for, initiating, using and evaluating instructional materials; basic techniques for developing teacher-oriented instructional units. Prerequisite: TV/101, which may be taken concurrently.

TV/116 Introduction to Educational Communications and Technology

Role of audio-visual communications and technology in teaching and learning; professional roles, mass-media, problems and goals are investigated. Prerequisites: TV/105 or consent of Instructor.

TV/142 Digital Communication Materials

Planning and production of graphic materials for communications and instruction; experience in designing, printing, editing, drawing, preserving, duplicating, slide-lettering and high contrast photographic techniques. No graphics background required.

TV/144 Photography for Instruction

Planning and production of Instructional materials using still or motion picture
photography, tech skills covered, major project required.

TV/145 Intermedia in Education 1/2 s.h.
Planning and production of videotaped units for instructional applications: operation of VTR equipment, lighting, sets, working with animation for video production; analysis and evaluation criteria and guidelines for diffusion; practical experience in working with professional clients is provided.

TV/150 Computer Applications to Individualized Instruction 3 s.h.
Introduction to computer-aided instruction (CAI) emphasis on on-line languages, instruction through simulation of individualized tutoring materials, including CAI course material, same as Computer Science 221/214.

TV/160 Film in the Classroom 3 s.h.
Visual literacy course; provides classroom experiences for future teachers helping children express ideas visually using photographic techniques as strategies to learn content and communicate ideas.

TV/181 Principles of Graphic Communication 3 s.h.
Language and design of graphic communication materials; principles from psychology and art; Investigation of media employed, and analysis of effectiveness of graphic materials. No art 465 or experience required. Not a production course.

TV/182 Survey of Educational Media Research 3 s.h.
Investigation of research from the behavioral sciences, communication technology and message design problems related to systems of instruction and media learning experiences.

TV/183 Administration of Educational Media Programs 3 s.h.
Principles of organizational and personnel management as they apply to directing the media program. Prerequisite: TV/160, TV/180, or equivalent.

TV/184 Special Topics in Educational Communications Technology 3 s.h.
Designed to cover areas of special interest to service groups; courses will vary from semester to semester.

TV/185 Workshop: Educational Media 2 s.h.
A two-week concentrated, "hands-on" learning experience in various aspects of the educational media, primarily for persons using video due to update competencies.

TV/220 Seminarian Study in Educational Media and Technology: Opportunity to investigate areas of specific concern to students. Prerequisite: consent of instructor.

TV/224 Educational Media and the Systems Approach to Instruction 3 s.h.
Planning for instruction through systematic development of learning units effectively utilizing all types of instructional resources. Prerequisite: TV/185 and consent of instructor.

TV/286 Research Methods in Educational Media 3 s.h.
Research projects, experimental design requirements and writing for publication. Prerequisites: TV/165 or equivalent, TV/114 and TV/162 and consent of instructor.

TV/288 Practical in Educational Media 1 s.h.
On-campus supervised administrative and other non-teaching and/or teaching experiences in the University Audiology Center and/or the College of Education.

TV/289 Seminar: Educational Media 3 s.h.
Current topics in educational media. Prerequisite: consent of instructor.

TV/292 Individual Instruction in Educational Media 3 s.h.
Opportunity to investigate areas of specific concern to student. Prerequisite: consent of instructor.

TV/293 Seminar in Educational Media 3 s.h.
Off-campus supervised administrative and other non-teaching experience in public schools, church, or industry. Prerequisite: consent of instructor.

TV/295 Seminar: Visual Learning, Thinking, and Communication 3 s.h.
Discussion of the "look and see" in the area of visual learning, thinking and communication from applied and philosophical perspectives, understanding and appreciation of principles of inductive approach end of the role values when applied to significant problems.

TV/395 M.A. Thesis: Educational Media 3 s.h.
Prerequisite: consent of instructor.

TV/396 B.S. Thesis: Educational Media 3 s.h.
Prerequisite: consent of instructor.

TV/495 M.S. Thesis: Educational Media 3 s.h.
Prerequisite: consent of instructor.

Post-Secondary and Continuing Education

Chairperson: Duane D. Anderson


Undergraduate Programs

Bachelor of Science in Health Occupations

The health occupations education major has been designed to prepare teachers for employment at the community college level in preparatory health occupations education programs. In addition to basic skill and core requirements of the College of Liberal Arts, students will complete courses in professional education and additional coursework in the health occupations education specialty field and/or supporting areas. Students making application to this program must currently hold appropriate certification, licensure and registry appropriate to the area of health occupations education in which they wish to teach, e.g., dental assisting, medical office assisting, respiratory therapy, and the like. The health occupations education major is planned upon this base, and provides work in professional education and the liberal studies appropriate to teachers who wish to acquire a baccalaureate degree.

Applicants to this program must satisfy criteria for admission to the Teacher Education Program of the College of Education. The health occupations' education program has been submitted to the Iowa Department of Public Instruction for approval in teacher certification and career education requirements.

Program Requirements

Coursework in Professional Education

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>7P/131</td>
<td>3-4 s.h.</td>
</tr>
<tr>
<td>7P/150</td>
<td>2-3 s.h.</td>
</tr>
<tr>
<td>7P/102</td>
<td>2-3 s.h.</td>
</tr>
<tr>
<td>7P/107</td>
<td>2-3 s.h.</td>
</tr>
</tbody>
</table>

Curriculum and Teaching Procedures

One course from each group:

Group I

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>7P/136</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>7P/161</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

Group II

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>7H/162</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>7H/112</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

Group III

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>7H/271</td>
<td>2-3 s.h.</td>
</tr>
<tr>
<td>7H/197</td>
<td>2 s.h.</td>
</tr>
</tbody>
</table>

Bachelor of Science in Health Occupations

The health occupations education major has been designed to prepare teachers for employment at the community college level in preparatory health occupations education programs. In addition to basic skill and core requirements of the College of Liberal Arts, students will complete courses in professional education and additional coursework in the health occupations education specialty field and/or supporting areas. Students making application to this program must currently hold appropriate certification, licensure and registry appropriate to the area of health occupations education in which they wish to teach, e.g., dental assisting, medical office assisting, respiratory therapy, and the like. The health occupations education major is planned upon this base, and provides work in professional education and the liberal studies appropriate to teachers who wish to acquire a baccalaureate degree.

Applicants to this program must satisfy criteria for admission to the Teacher Education Program of the College of Education. The health occupations' education program has been submitted to the Iowa Department of Public Instruction for approval in teacher certification and career education requirements.
Additional Requirements
7H:191 Community College Teaching Internship 12 s.h.
7H:190 Seminar, Health Occupations Education 3 s.h.
Additional specialty coursework in health occupations education 10 s.h.

Students may avail themselves of special workshops or courses offered by specific health colleges when appropriate prerequisites have been met.
Coursework may also be taken in specific basic sciences supporting health occupations education.
In addition to coursework in the health specialty and basic sciences, students may also choose electives from the following:
7H:175 Post-High School Faculty Development Workshop 0-2 s.h.
7P:136 Introduction to Instructional Design 3 s.h.
7P:143 Introduction to Statistical Methods 3 s.h.
7P:181 Introduction to Theories of Learning 3 s.h.
7P:283 Motivation in Education 3 s.h.
7C:110 Processes of Change and the Counselor 2-3 s.h.
7C:150 Psychological Aspects of Women's Roles 1-3 s.h.
7V:105 Selection and Utilization of Educational Media arr.
7V:116 Introduction to Educational Communications and Technology arr.

Coursework in the health occupations education specialty and supportive fields should be carefully planned in consultation with the advisor.

Graduate Programs
Higher Education
Master's Program (without thesis) Purpose: To prepare students for entry-level staff and administrative positions such as assistant dean of instruction, in two- and four-year colleges.
Educational Specialist Program Purpose: To provide the advanced graduate education model by instruction at the undergraduate level in two- and four-year colleges and by administration in higher education not planning to continue for the doctorate; the Specialist degree may be awarded upon completion of a joint program in higher education and an academic discipline comprising a minimum of 60 semester hours of graduate work, or upon completion of a higher education sequence following a master's degree program.
Doctoral Program Purpose: To prepare professional personnel for teaching, research and administration in higher education.
Adult Education Master's Program (with or without thesis) Purpose: To provide basic understanding of adult learning theory, instructional methodology and adult group processes in preparation for careers as professional adult educators or in areas that involve working with adults in such settings as schools, libraries, extension, public health and community development programs.

Doctoral Program Purpose: To prepare for teaching, research and advanced leadership positions in the field of adult education; emphasis given to a broad background with cross-disciplinary relationships.

Iowa Community College Certification
Students who wish to meet certification requirements for community college teachers in Iowa (Endorsement 72) must complete a minimum of six semester hours of course work in higher education and/or closely related areas. Required (or specific alternatives may be chosen in consultation with the Office of Community College Affairs).
7H:271 The Community College 2-3 s.h.
7H:211 Problems in College Teaching 2-3 s.h.
Electives 6 s.h.
At least two semester hours of American history or American government as required for Iowa certification.
A master's degree in the student's teaching area is required for certification in art and science areas.

Special Facilities
A resource and document collection relating to community colleges is housed in room 416 Jefferson Building. This collection is available for students doing research on topics related to community colleges for seeking employment information in relation to these institutions. Inventoried data, accreditation and approval reports, college catalogs, etc., are to be found in the collection.

Fingerprint Aids
One quarter-time graduate assistantship is assigned to the coordinator of the higher education program, and one half-time assistantship is assigned to the foreman of the community college program.

Courses
7R99 Problems and Policies in Higher Education 3 s.h.
7R96 Study and analysis of current selected functions, problems and policies in American higher education. A basic course open to non-majors and undergraduates.
7R97 Designing Learning Programs for Health Careers Education 3 s.h.
7R98 Emphasis placed on development and evaluation of educational programs; suggested planning procedures and typical curricula analyzed and practical application studied; activities individualized to meet various background and objectives. Three to Eight credits requirement.
7R99 Learning Strategies for Career Education 3 s.h.
7R99 Role of health specialist as teacher examined; variety of teaching strategies explored through discussions, observations and teaching; activities individualized to meet various background and objectives.
7R175 Post-High School Faculty Development Workshop 0-2 s.h.
7R115 Suggested to provide post-high school instructors with work in other discipline areas or in some aspect of professional education; workshop topics may include programs for upgrading of administrative and supportive personnel as well as faculty members.
Secondary Education

Focus on development of understanding of planning processes and applications in higher education at the institutional, statewide and national levels. Orientation to concepts of planning: the environment for educational planning; issues in educational planning: planning as an organizing tool; methodology and data bases for planning: governmental systems, state and local policies. Analysis and appraisal of exemplary institutional and agency plans.

P0111 Administrative Decision-Making in Higher Education 3-0-3 3-0-3
Advisory committee, higher education planning, conceptual materials. Professor. 701-210, or consent of instructor.

P0112 Research in Teaching Leadership 3-0-3
Full semester teaching experience consisting of supervised one-half-time teaching with a community college or university level. Two years of college level experience in research-detected leadership. Professor. P0111, consent of instructor.

P0113 Thesis in Higher Education 3-0-3
Professor. consent of instructor.

P0116 Seminar: History and Philosophy of American Higher Education 3-0-3
Discussions of scholarly literature and conceptual issues; attention to teaching leadership in higher education, its significance in the development of educational, institutional and institutional bases of United States effect of theoretical and philosophical foundations on present and future higher education. Professor. 701-310, or approval in philosophy and history, or consent of instructor.

P0131 Seminar: Health Careers Education 1-0-1
Focus on current issues and special problems in health careers education topics and selected academic studies in role of health careers education; may be repeated. Professor. consent of instructor.

P0132 M.A. Thesis in Higher Education 3-0-3
Professor. consent of instructor.

P0135 Educational Specialist Research in Higher Education 3-0-3
Professor. consent of instructor.

P0141 Pro-seminar in Higher Education 1-0-1
Current topics and major areas of professional and research interest. Taught for Ph.D. majors in higher education. May be repeated up to a total of four semesters.

P0142 Ph.D. Thesis in Higher Education 3-0-3
Professor. consent of instructor.

Secondary Education

Chairperson: John E. McArdle
University: professor; G. Robert Carman, Robert M. Flath, John H. Hefner, John E. Jones, Robert C. Tayan, Martha J. Dopp, Michael J. Furlong, professor emeritus; Cornell J. LeVaux, Hugh F. Smyth, Laura A. Van Dusen, associate professor; Charles A. Gibson, professor; Steven E. Roscetti, Daniel E. Konitz, Vincent N. Lamore, John W. McMillan, associate professor; Harold P. Heinke, professor; Richard E. Parillo, instructor; Donald J. Newkirk, instructor; Joseph M. Foster, professor; Richard E. Pirih, instructor; Rona G. Lesar, instructor; Lila L. Mowen, instructor; associate professor; Rachel A. Bader; B. Marilyn; Sherry C. Brown, instructor; Mary E. Allred, instructor; Laura E. Brown, instructor; David E. Shelton, Ph.D. (in progress); William K. Tabor; John T. White, Ph.D. (in progress). Degrees offered: B.A., B.F.A., B.G.S., B.M., M.A., M.S., M.A.T., Ed.D., Ph.D.

The primary mission of the Division of Secondary Education is to strive for excellence in instruction in secondary schools. In fulfilling this mission, it must constantly investigate what constitutes excellence and the possibilities of its instrumentation in the schools. Part of such investigation comes from a collision of research, theory and teaching practices in secondary education. Part of it must come from laboratory experimentation with students and teachers in schools in which there is freedom to innovate. The concept of excellence in instruction undergirds the selection of teachers, supervisors, curriculum directors and teacher-educators and administrators who will directly serve the secondary schools. The Division provides preparatory programs for personnel in all secondary areas for which the University has viable programs of academic offerings.

Persons who guide and facilitate the learning experiences of
secondary school students must have an understanding and appro-
ciation of adolescents, a sound background in the liberal arts, an 
open-minded toward contemporary social and its problems, and 
enthusiasm for the subject taught.

Junior and senior high school teachers usually specialize in a 
particular subject, although they often teach classes both in their 
major subject and in related subjects. Teachers of home economics, 
agriculture, music, art, industrial arts, and business education, 
less frequently than other teachers, conduct classes in subjects 
outside their major field.

In addition to their classroom work, secondary teachers plan and 
develop teaching materials, construct and correct tests, keep 
records and make out reports, consult with parents, and perform 
other administrative duties.

They are also involved in supervision of student activities, 
including clubs and social functions, and in out-of-school affairs 
as interested members of the community where they teach.

Maintaining good relations with parents and the local community is 
an important facet of the teacher’s responsibility.

Undergraduate Programs

Students preparing for secondary school teaching must fulfill 
the general requirements for a bachelor’s degree in the College of 
Liberal Arts or in the College of Business Administration, must 
fulfill the requirements for a major in a specific department or 
division in the College of Liberal Arts or College of Business 
Administration, and must complete the professional courses nec-
ecessary for Iowa teacher certification, totaling from 22-28 semester 
hours, which includes a semester of classroom teaching during the 
year. Students preparing to teach art, music or physical education 
should take methods courses and acquire student-teaching experi-
ence at both the secondary and elementary levels.

During the freshmen and sophomore years, the student comp-
mutes most of the general requirements for the bachelor’s degree 
by acquiring proficiency in rhetoric, mathematics, physical edu-
cation and a foreign language, and by satisfying core requirements 
in literature, natural science, social science and historical-cultural 
fields.

Program Requirements

Foundations 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 their advisor.

76:100 Pre-education Practicum 2 s.h.
76:100 Introduction, Secondary School Teach-
ing 2 s.h.
78:75 Educational Psychology and Measure-
ment 3 s.h.

Methods and Student Teaching

Students must complete the special methods course in their major 
teaching field prior to the semester in which they elect to do 
student teaching.

Students must make applications for student teaching by March 
31 providing their senior year.

Students elect 76:192 and/or

75:192 Observation and Laboratory Practice in Secondary 
Schools. 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 the options:

75:190 Individual Projects in Laboratory Prac-
tice 3 s.h.
75:187 Seminar Curriculum and Student Teach-
ing 3 s.h.
75:105 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 a practical knowledge 
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.

Graduate Program

Members of the Division of Secondary Education serve as advisors 
to graduate students who are candidates for the M.A.T., M.A. 
M.S., Ed.S., or Ph.D. degrees.

Opportunities are provided for advanced study in such fields as 
secondary school administration, secondary school curriculum, art 
education, business education, English education, mathematics 
education, music education, physical education, science educa-
tion, social studies education and speech education.

Programs leading to the M.A.T. degree are provided in some 
teaching fields for students with superior academic records who 
have earned the baccalaureate degree but who have not acquired 
certification for teaching by the completion of required work in 
professional education. Other graduate programs leading to the 
M.A., or M.S. and Ed.S. degrees, which usually combine ad-
vanced work in the academic disciplines and professional educa-
tion, are designed to enhance the preparation of master teachers, 
department heads, supervisors, curriculum consultants, directors, 
and coordinators for secondary schools and community colleges.

More extensive interdisciplinary programs leading to the Ph.D. 
degree also prepare individuals to serve as college or university 
inscriptions in their respective fields of specialization in colleges of 
education or in the academic departments of their major field, in 
addition to the types of positions previously mentioned. Some of 
the "combined" programs are administered jointly by the Col-
lege of Education and another academic department of the Uni-
versity, whereas other programs are administered primarily by 
only one of the cooperating units.

Programs leading to the Ph.D., Ed.S. and Ph.D. degrees are 
also provided for the preparation of administrative and supervisory 
personnel who may assume positions of leadership in the field of 
primary education, including college and university instruction 
in this area.

Generally speaking, the minimum requirements pertaining to 
admission, registration, academic standing, residency, etc., of
students in advanced degree programs in secondary education do not exceed the requirements outlined in the "Manual of Rules and Regulations of the Graduate College." Two major exceptions to the generalization do frequently occur, however: (a) applicability for admission to most of the degree programs in this Division requires a year or more of successful teaching experience, and in the cases noted in the following visits, the minimum grade-point requirement exceeds the Graduate College minimum.

The following are the types of advanced programs offered by the Division of Secondary Education:


*Minimum grade point average for admission is 3.0. More specific information about such items as admission requirements and procedures, required and elective courses, tool requirements and comprehensive examinations in the various advanced degree programs cited above is contained in the bulletins entitled *Advanced Studies in Education.*

Financial Aid
A limited number of half-time assistantships is available for students pursuing Ph.D. degrees in secondary education. Holders of such assistantships are permitted to register for no more than 12 hours per semester. Utilize special permission is granted, holders must register for at least nine hours per semester. The assignments of assistants vary, but most involve the participants in teaching selected undergraduates' methods courses or in the supervision of practicum experiences.

Courses

78:01 Pre-Education Practicum 1.5 a.h.

78:10 Pre-Education Practicum 1.5 a.h.

78:10-102 Introduction to Secondary School Teaching 2 a.h.

78:10-101 Observation of secondary education, including past and present educational trends; study of major characteristics of teachers, students and schools and behavior patterns among these groups.

78:10-201 Introduction to Education 2 a.h.

Basic structure of field of education; consideration of administrative organizations, instructional principles and contemporary problems at both elementary and secondary levels.

78:11 Directing Special Activities 2 a.h.

Planning, organizing and evaluating curricula and counselor special programs in secondary schools; directing various plans, preparing for competitive speech and debate activities. Same as Special and -- 34:107.

78:11-101 Psychology of Education 2 a.h.

78:11-102 Introduction to Psychology of Education 2 a.h.

Application of problem-solving in each case upon an individual and financial decision; emphasis on city's current responsibilities and basic economics principles; exploration of consumer assistance and consumer awareness. Same as Business 45:106.

78:10-104 Principles of Basic Business 2 a.h.

Integration of principles of business structure and Finance into fundamental principles of economics and personal Finance; intended primarily for secondary school teachers of business and social studies subjects. Same as Business 45:104.

78:10-105 Advanced Methods: Art 2 a.h.

Theory and practice of teaching art at elementary and secondary levels; techniques of instruction, criticism, and instruction of visual, graphic and industrial art operations and techniques. Same as Business 45:104.

78:10-106 Introduction to Environmental Studies for K-12 Programs 2 a.h.

78:10-107 Implementation of Environmental Studies for K-12 Programs 2 a.h.

78:10-108 Refuge Business and Consumer Classes 3 a.h.

78:10-109 Methods: Business Subjects 3 a.h.

78:10-110 Methods: Teaching Business Subjects 3 a.h.

78:10-111 Methods: Teaching Business Subjects 3 a.h.

78:10-112 Methods: Teaching Business Subjects 3 a.h.

78:10-113 Methods: Teaching Business Subjects 3 a.h.

78:10-114 Methods: Teaching Business Subjects 3 a.h.

78:10-115 Methods: Teaching Business Subjects 3 a.h.

78:10-116 Methods: Teaching Business Subjects 3 a.h.

78:10-117 Methods: Teaching Business Subjects 3 a.h.

78:10-118 Methods: Teaching Business Subjects 3 a.h.

78:10-119 Methods: Teaching Business Subjects 3 a.h.

78:10-120 Methods: Teaching Business Subjects 3 a.h.

78:10-121 Methods: Teaching Business Subjects 3 a.h.

78:10-122 Methods: Teaching Business Subjects 3 a.h.

78:10-123 Methods: Teaching Business Subjects 3 a.h.

78:10-124 Methods: Teaching Business Subjects 3 a.h.

78:10-125 Methods: Teaching Business Subjects 3 a.h.

78:10-126 Methods: Teaching Business Subjects 3 a.h.

78:10-127 Methods: Teaching Business Subjects 3 a.h.

78:10-128 Methods: Teaching Business Subjects 3 a.h.

78:10-129 Methods: Teaching Business Subjects 3 a.h.

78:10-130 Methods: Teaching Business Subjects 3 a.h.
Special Education

Chairperson: Alan B. Frank
Faculty: professors Clifford B. Brown, Raymond B. Wapena, Paul M. Bertol; associate professors Louis B. Brown, Alan F. Frank, John T. Fink, Jr., Archie J. McNair; assistant professors Robert C. Gorden, Alice M. O'Kane
Degrees offered: B.A., B.S., M.A., Ed.S., Ph.D.

Undergraduate Programs
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 trend in special education toward the accommodation of handicapped children in regular classrooms with supplemental help rather than the segregation of handicapped children in special classes.

The student who wishes to maximize career opportunities in special education should plan to pursue advanced degree work.

The course 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.

Sixty students are admitted to the introductory courses in special education each year. Total cumulative grade-point average is the sole criterion for admission. Students are notified by mail about June 15 regarding their admission to the program for the coming fall term. The program sequence is established to begin in the fall of the sophomore year and is a three-year sequence.

A student majoring in special education has three options: to qualify for approval to teach the mentally retarded as the elementary level (approval number 81); approval to teach the mentally retarded at the secondary level (approval number 81, enrollment number 20); or approval to teach the physically handicapped at the elementary level (approval number 84). Both elementary programs require that the student also complete the requirements for certification in elementary education (approval number 10). 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 guest teaching, guest lectures, field trips, simulated teaching experiences, the use of observation techniques, practical experiences and extensive use of media.

The special education major requires a common core of coursework plus choices in the chosen area of teaching — either the mentally retarded or the physically handicapped.

Program Requirements

Special Core Requirement—Natural Science
Students majoring in Early Childhood, Elementary and Special Education should complete the special Science/Mathematics Foundation designed for them. Completion of this core requirement is a prerequisite to enrolling in 70:163 Methods: Elementary School Science and 70:163 Methods: Elementary School Mathematics. This core requirement may be satisfied in one of three ways:

Satisfactory completion of 97:55-56 Social Foundations 1-11 and 22B:460 Theory of Arithmetic
Satisfactory completion of equivalent courses at another four-year approved college or university; or
Prior to declaration of an education major and/or admission to a teacher program, successful completion of The University of Iowa natural science core requirement and passage of special tests dealing with the content of 97:55-56 and 22B:460. Students not passing the science competency examination must register for 97:104; students not passing the mathematics examination must register for 22B:80.

Continuous Core

7U:30 Introduction to and Observation of Exceptional Children 2 1/2 hrs.
7U:31 Introduction to and Observation of Exceptional Children 2 1/2 hrs.
7U:34 Pre-Education Practicum: Exceptional Children 2 hrs.
7U:32 Instructional Methods and Procedures in Special Education 3 hrs.
7U:33 Instructional Methods and Procedures in Special Education 3 hrs.
7U:35 Practicum in Special Education 2 hrs.

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

Coursework required by Special Education:

7U:190 Laboratory Practicum in the Education of the Mentally Retarded Child 7 hrs.

Certification in Elementary Education and Elementary Special Education with Emphasis in the Physically Handicapped

7U:139 Orientation to Rehabilitation of the Physically Handicapped Child 3 hrs.
3:15 Introduction to Speech and Hearing Processes and Disorders 3 hrs.
7U:191 Laboratory Practicum in Education of the Physically Handicapped Child 7 hrs.

Certification in Secondary Special Education (Mental Retardation)

Coursework required by Special Education:

7U:133 The Culturally Different in Educational Settings 3 hrs.
7X:103 Facilitating Career Development in the Schools 4 hrs.
7U:192 Laboratory Practicum in the Education of the Mentally Retarded Child 15 hrs.
Other required coursework:
77:75 Educational Psychology and Measurement 3 s.h.
75:91 Pre-Education Practicum (optional) 1-2 s.h.
75:100 Introduction to Secondary School Teaching 2 s.h.
77:170 Psychology of Reading 3-4 s.h.
77:191 Operation of Audio-Visual Equipment 1 s.h.
77:190 Selection and Utilization of Educational Media 2 s.h.
34:1 Introduction to Sociology: Principles 4 s.h.
34:140 Criminology 3 s.h.
or
34:141 Juvenile Delinquency 3 s.h.

Students are encouraged to elect additional courses in content fields appropriate to potential instructional roles.

Graduate Programs
Graduate programs are offered in mental retardation, physically handicapped, behavior disorders/learning disabilities, school psychology, work-study coordination, administration of special education and teacher training.

General Admission Requirements
The following are required for admission to any of the graduate programs in the Division of Special Education:

All applications are reviewed by an admissions committee of the Division of Special Education.

A minimum grade-point average of 2.50 is required for admission to master's and education specialist degree programs; a 2.70 minimum is required for doctoral work.

The applicant is expected to have completed the Graduate Record Examination (Apitude Test) before being admitted to the program. Combined (Apitude Test) scores of 1000 or above are preferred.

The applicant must have the ability to work with children and youth (see specific requirements in each program area).

The applicant must provide letters of recommendation regarding interpersonal competence and successful work with children and/or youth. A personal interview may be required.

School Psychology students should note that the application deadline is March 1 of each year. All application materials must be received by this date. No more than 10 students are accepted in the School Psychology program each year.

M.A. Program (non-thesis)
Minimum total semester hours required: 38

Purpose: To prepare teachers to implement a wide range of educational plans to assist the exceptional child in school, to function as resource teachers, itinerant teachers and teachers in self-contained classrooms. Successful completion of this program qualifies the person for recommendation for certification in teaching the mentally retarded, the physically handicapped, the emotionally disturbed or the learning disabled.

Admission requirements: See general admission requirements above. Students must have certification in elementary education (Iowa Endorsement number 10); or secondary education (Iowa Endorsement number 20). It is preferred that candidates have one or more years of teaching experience.

Ed.S. Program with Emphasis in Special Education
Minimum total semester hours required: 60

Purpose: To provide advanced graduate training for professionals in the field of special education. This may include individuals in consultation, supervisory work and work-study coordination in special education.

Admission requirements: See general admission requirements above. Additional requirements include a master's degree or its equivalent; preparation and certification in special education; and a minimum of one year full-time teaching experience before admission to the program.

Ed.S. Program with Emphasis in Special Education Administration
Minimum total semester hours required: 60

Purpose: To provide sufficient training and experience to enable graduates to be competent directors of local, regional and state special education programs. Successful completion of the program qualifies the person for certification in Iowa to serve as a director of special education, and students are encouraged to complete sufficient coursework in general special education administration to qualify for the superintendent's credential.

Admission requirements: See general admission requirements above. Additional requirements include a master's degree or its equivalent; preparation and certification in at least one area of special education; and teaching or related relevant experience with exceptional children. A minimum CBE (Aptitude Test) score in excess of 1000 is preferred.

Ed.S. Program with Emphasis in School Psychology
Minimum total semester hours required: 60

Purpose: To provide the necessary coursework and internship training in the areas of education and psychology, to enable graduates to be competent school psychologists. Successful completion of the program qualifies the person for certification in Iowa (endorsement number 60) to serve as a school psychologist, providing the graduate of the program has had two years of successful teaching experience; otherwise, temporary certification is granted until two years of successful performance as a school psychologist have been completed.

Admission requirements: See general admission requirements above. The applicant must also have work experience which demonstrates an interest in children and/or adolescents and demonstrates the ability to work with them individually and in groups; the experience must be verified by letters of reference and evalua-
ation. A 3.00 grade-point average on master's degree coursework is preferred; applicants without master's degrees must have a 2.70 undergraduate grade-point average.

Ph.D. Program
Minimum total semester hours required: 90

Purpose: To prepare students as consultants, school psychologists, directors of special education and university teacher trainers. The program permits students to study and practice more extensively in their area of interest in special education.

Admission requirements: See general admission requirements above. Additional requirements include a master's degree or equivalent; a minimum of one year full-time teaching experience with exceptional children in all areas except school psychology; and a statement indicating the student's perceived training needs.

Special Facilities
Special facilities available to students in Special Education include the University Hospital School (for mentally retarded and physically handicapped) and the University Psychopathic Hospital/Child Psychiatry Program for children and youth with behavior disorders.

Financial Aid
A limited number of teaching and research assistantships are available to full-time students in M.A., Ed. S. and Ph.D. programs. The Janet Zober Memorial Tuition Stipend is available to an upper division or graduate student in a training program for teachers of the physically handicapped.

Courses
7020 Introduction to and Observation of Exceptional Children I 3 s.h.
Variety of types of exceptional children and their education problems are described and discussed. Restricted to freshmen in special education. Fall.
7021 Introduction to and Observation of Exceptional Children II 3 s.h.
Continuation of 7020. Restricted to seniors majoring in special education. Prerequisite: 7020. Spring.
7028 Instructional Methods and Procedures in Special Education 3 s.h.
Participation in video-taped teaching simulation; emphasis in educational placement and selection and utilization of various methods and materials applicable for use with different kinds of handicapped children. Prerequisites: 7020, 21, 34 or equivalent and admission to Teacher Education Program in Special Education. Fall.
7130 Instructional Methods and Procedures in Special Education II 3 s.h.
Continuation of 7130. Prerequisites: 7130. Spring.
7134 Pre-Internship Practicum with Exceptional Children 3 s.h.
Involves observing and working with children with various types of handicaps. Restricted to majors in special education. Taken concurrently with 7130/7131.
7138 Methods Practicum in Special Education 3 s.h.
Restricted to majors in special education. Taken concurrently with 7132/7133. Involves applying knowledge gained in lectures in actual teaching situations. Restricted to majors in special education.
7132 The Culturally Different in Educational Settings 3 s.h.
A study of the manifestations and problems of culturally different children and how best to serve them in the educational system. Prerequisite: Psychology 21 or 117. Fall, spring, summer.
7133 The Culturally Different in Educational Settings 3 s.h.
A study of the manifestations and problems of culturally different children and how best to serve them in the educational system. Prerequisite: Psychology 21 or 117. Fall, spring, summer.
7136 Mental Retardation 3 s.h.
A study of mentally retarded child and his or her problems; causes, diagnosis and psychological problems of retardation; principles, factors and conditions in learning of educable mentally retarded in public school settings. Spring, summer.
7138 The Traumatic and Sub-Traumatic Mentally Retarded Child 3 s.h.
Selection of pupils, organization of program, management of trainable child. Curriculum content, specific materials and methods for instructing trainable children. Prerequisite: consent of instructor. Spring.
7137 Education of the Gifted 3 s.h.
Preparation for work on a minor paper on a topic chosen by the student in consultation with the instructor. Knowledge of theory and practice of giftedness. Methods and techniques for handling exceptional children. Fall, winter.
7191 Laboratory Practicum in Education of the Physically Handicapped Child 3 s.h.
Involves working with physically handicapped. Prerequisite: consent of instructor.
7192 Laboratory Practicum in Education of the Mentally Retarded Child 3 s.h.
Involves working with mentally retarded. Prerequisite: consent of instructor.
7193 Individual Instruction in Special Education/Undergraduate area.
Prerequisite: consent of instructor.
7201 Exceptional Children: Assessments and Research 3 s.h.
An appraisal of current state of knowledge in special education—assessments and research in special education. Usually taken concurrently with 7203, working directly with handicapped children or adults in practice settings. Prerequisite: consent of instructor. Fall, summer.
7202 Exceptional Children: Curriculum, Methods and Materials 3 s.h.
Curriculum, methods, materials and techniques in special education. Usually taken concurrently with 7203. Prerequisite: consent of instructor. Spring, summer.
7203 Practicum with Exceptional Children 3 s.h.
A practicum experience usually taken concurrently with 7201 and 7202. Working directly with handicapped children in public schools, institutional and community agencies. Fall.
7206 Advanced Problems in Psychology of Exceptional Children 3 s.h.
Current psychological techniques in testing and evaluating exceptional children.
7207 Administration and Supervision of Special Education 3 s.h.
For directors of special education and school administrative personnel.
7207 Psychological Services 3 s.h.
Specialized practices in psychological and educational evaluation in school systems. Prerequisite: 7203, 7213, 7221 and consent of instructor. May be repeated.
7208 Administration of Learning Disabilities 3 s.h.
Administrative and professional evaluation of learning disabilities. Prerequisites: Psychology 51, consent of instructor.
7219 Community and Institutional Services for the Handicapped 3 s.h.
Organization of community and regional services to mentally retarded, i.e., day care, clinics, community care, school after-school and activity centers, experiences provided in actual working for services as well as planning and organizing of programs. Prerequisite: consent of instructor.
7243 Psychological/Personality Assessment of the School-Age Child 3 s.h.
Understanding the variables that influence a child's behavior; special emphasis on the use of behavior rating scales, objective and projective personality tests. Prerequisite: consent of instructor. Fall.
7244 Introduction to Behavior Disorders/Learning Disabilities 3 s.h.
Systematic examination of diagnostic and treatment model of behavior disorders and learning disabilities within various community settings providing psychological, social and educational programs for children and youth with behavior disorders. Prerequisite: consent of instructor.
7245 Behavioral Disorders/Learning Disabilities 5 s.h.
Basic theories, principles, concepts, problems, tests, methods and procedures of specific behavior patterns concerning educational practice for children and youth with behavioral dysfunctions. Prerequisite: consent of instructor.
TU340 Behavior Disorders/Learning Disabilities 3 s.h.
Combination of TU340, Prerequisite: consent of instructor.
TU340 Practicum: Behavior Disorders/Learning Disabilities 3 s.h.
Supervised practice with children and youth with psychological disorders; taken concurrently with TU340 and TU346. Prerequisite: consent of instructor.
TU346 Practicum: Behavior Disorders/Learning Disabilities 3 s.h.
Combination of TU346, same concurrent with TU340 and TU346. Prerequisite: consent of instructor.
TU349 Seminar: Behavior Disorders/Learning Disabilities 1 s.h.
Integration of theory and practice, group discussion of program experiences; taken concurrently with TU340 and TU346. Prerequisite: consent of instructor.
TU350 Seminar: Behavior Disorders/Learning Disabilities 1 s.h.
Courtroom of TU340, same concurrent with TU340 and TU346. Prerequisite: consent of instructor.
TU351 Individual Intelligence Testing 3-4 s.h.
Administration of individual intelligence tests and interpretation of test results; issues in psychological testing; factors which influence test performance. Prerequisite: TU142.
TU352 Advanced Laboratory Practice with Exceptional Children 2 s.h.
Observation, experimentation and individual instruction pertaining to problems of working, guidance and administration, evaluation, construction and application of remedial materials for exceptional children. Prerequisite: consent of instructor.
TU353 Individual Instruction in Special Education 2 s.h.
Prerequisite: consent of instructor.
TU358 Seminar: Advanced Problems in Teacher Education for Prospective Teachers of Exceptional Children 2 s.h.
Perspective of problems dealing with program design; program goals, methods, experiences and evaluation practices; recruitment; selection; articulation; accredita-

tion; practice courses. Prerequisite: consent of instructor.
TU358 Seminar: Current Issues in School Psychology 2 s.h.
Restriction to Ed. S. and Ph.D. students. Prerequisite: consent of instructor.
TU354 Seminar: Research Practicum in Special Education 3 s.h.
Areas of mental research in special education; design of small-scale research projects; particular attention in planning, managing and reporting research. Emphasis assigned in current projects for special research in research. Prerequisite: consent of instructor. Fall.
TU356 Seminar: Program Development in Special Education 2 s.h.
Prerequisite: consent of instructor.
TU357 Seminar: Current Issues in Special Education Administration 2 s.h.
Prerequisite: TU356 and consent of instructor. Spring.
TU359 Practicum in College Teaching 2 s.h.
Prerequisite: consent of instructor.
TU360 Behavioral Science/Research Practicum 2 s.h.
Oriented toward gain experience researching school psychology practicum students. Prerequisite: consent of instructor.
TU365 Field Service Project in Special Education Internship 2 s.h.
Prerequisite: consent of instructor.
TU390 M.A. Thesis in Special Education 2 s.h.
Prerequisite: completion of requirements.
TU395 Master Plan of Special Education 2 s.h.
Prerequisite: consent of instructor.
TU403 Educational Specialties Research 2 s.h.
Prerequisite: consent of instructor.
TU405 Ph.D. Thesis in Special Education 2 s.h.
Prerequisite: consent of instructor.
Prerequisite: consent of instructor.
Organization of the College

Extraordinary demands have been imposed on the engineering profession in general and on engineering education in particular by the broadening spectrum of activities in which the engineer practices and the increasing complexities of technology. The College has responded to these demands by departing from the traditional pattern of organizational structure of engineering colleges. The College of Engineering has organized its faculty and facilities into different types of administrative units—academic programs, divisions, and institutes.

The academic program units are identified as Biomedical Engineering, Chemical Engineering, Civil Engineering, Electrical Engineering, Engineering, Environmental Engineering, Industrial and Management Engineering, Mechanical Engineering, and Mechanics and Hydraulics.

Each program unit consists of faculty who have a major interest in and are responsible for the area represented by the curriculum. The faculty are responsible for design of curricula at all degree levels; for counseling of undergraduate and graduate students; and for all other matters affecting the individual student and his or her academic program. The chief administrative officer of a program is the program chairman.

The divisions are identified as Energy Engineering, Information Engineering, Materials Engineering, and Systems Engineering. These units are the basic operating units of the College and consist of faculty and facilities organized according to broad functional areas of modern engineering endeavor. Each division is responsible for the development and operation of all laboratories at all levels of activity and for all purposes for the content, teaching, and scheduling of all academic courses; and for the conduct of all research programs. The chief administrative officer of a division is the division chairman.

This grouping of resources according to broad functional areas combined with strong vertical curricular programs provides clear insight for the student of the cross-disciplinary nature of modern engineering while he is engaged in formal academic studies and, in operations, provides a broadening educational scope of the College and encourages interdisciplinary and innovative programs.

Iowa Institute of Hydraulic Research
The Iowa Institute of Hydraulic Research (IIHR) is the third basic unit of the College. The Institute is widely acknowledged to be one of the world’s leading organizations in the areas of basic and applied fluids research.

The Institute conducts programs of fundamental research and advanced design and analysis in the areas of environmental pollution, bioengineering, naval hydrodynamics, river mechanics, ice hydraulics, hydrology, water resources, hydraulic structures, fluid mechanism, and advanced instrumentation and data handling techniques for fluids research.

The Institute’s activities are housed in three separate laboratories. Major research facilities include an IBM 1600 Data
Acquisition and Control System for on-line acquisition and analy-
sis of experimental data; a ship model towing tank; three large
wind tunnels; a refrigerated flume and ice force testing facilities;
an environmental flow facility for modeling of atmospheric flows;
two large tanks for conduct of river and coastal model studies;
and a variety of flumes, special air-flow apparatus and liquid flow
circuits. Most of the Institute's research engineers, which cur-
cently number in excess of 20, also hold professorial appointments
in the College of Engineering.

Direct student participation in all research and consulting activ-
ities is one of the hallmarks of the Institute's operation.

College Facilities

The Engineering Library
The Engineering Library is a center of College activity. Its
collection includes 32,000 books and 750 periodicals. It is
equipped with microfilm and microfiche readers.

Computer Services
Services of the University Computer Center are used exten-
sively 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 in the CBE Laboratory.

Computer Based Education (CBE) Laboratory
The Computer Based Education Laboratory provides on-line in-
teraction with the University's IBM 360-65 and HP-2000 com-
puter systems via video display and hard copy terminals. The
laboratory also contains one commonly used computer accessory
equipment such as key punch and line printers, as well as video
equipment for instructional purposes.

Placement Services
Students and alumni are advised to themselves of the placement ser-
vice provided by the College of Engineering. Interview rooms
and a placement library of informational material are located in the
Engineering Building. Assistance is available for arranging inter-
views and obtaining information on job opportunities.

Undergraduate Programs

Degree Requirements
The Bachelor of Science degree in engineering requires a min-
imum of 128 semester hours of credit including satisfaction of the
specific requirements of the major program as described in fol-
lowing sections. 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 and must have a minimum GPA of 2.0 on all
college work used to satisfy the degree requirements and on all
work undertaken at The University of Iowa.

Curricular Structure
The undergraduate programs in Engineering at Iowa are designed to
provide the student with a strong background in those fund-
amental areas upon which all engineering is based, substantial
depth in the branch of engineering chosen for specialization, and
sufficient background in the social sciences and humanities to
appreciate the societal implications of engineering projects.

The curriculum consists of four stems extending through the
entire four years of undergraduate study. The stems are mathes-
matics, basic and applied sciences, socio-humanistic studies, and
analysis and de sign. The mathematics, basic and applied
sciences, and socio-humanistic studies courses develop the back-
ground required for engineers. The practice of engineering in-
volves the utilization of this education to design practical solutions
to real problems. This ability is developed in the analysis and
design stem. The course sequence begins with introduction to
Engineering in the first semester of the freshman year and termi-
nates with senior level design courses during the final year.

The program curricula are based on a core program composed of
courses which are basic to all engineering and upon which all
engineering programs draw. The courses involved consist of
mathematics, chemistry, physics and rhetoric, in addition to engi-
neering courses, and constitute approximately one half of the total
curriculum.

In addition to core courses and the socio-humanistic elective
sequence, each program specifies a group of courses which are
required of students majoring in that program. These courses
provide the common background which the faculty considers to be
expected of every graduate.

The remaining courses are technical electives chosen by the
student in consultation with an academic advisor. These courses
allow the student to develop additional depth in areas of special
interest, and are ordinarily taken at the senior level. The philoso-
phy of a core program permits the first semester to be entirely
common and the first three semesters to be arranged so that
a student may follow any program major, transfer between majors,
or not declare a major during this period with only minor adjust-
ments in schedule. This permits ample time before declaring a
major to become familiar enough with the various programs so that
the major chosen best fits the interests of the individual student.

The curriculum for the freshman year is:

First Semester
1011 Principles of Chemistry I 3 s.h.
101-102 Rhetoric 4 s.h.
223M-35 Engineering Calculus I 4 s.h.
580-001 Introduction to Engineering: Design I 2 s.h.
580-003 Introduction to Engineering: Graphics 2 s.h.

15 s.h.

Second Semester
4-6 Elementary Chemistry Laboratory 2 s.h.
10-2 Rhetoric or free elective 3 s.h.*
223M-36 Engineering Calculus II 4 s.h.
580-002 Introduction to Engineering: Design II 2 s.h.
580-004 Introduction to Engineering: Computation 2 s.h.

13 s.h.

* A maximum of 7 s.h. is allocated to satisfaction of the rhetoric
requirement. Those students who qualify for 10-3 will be allowed
3 s.h. of free elective while those taking the 8 s.h. sequence of
10-1, 10-2 (only 7 s.h. toward the engineering pro-
gram). The courses listed above are required of all students in
engineering. One additional course during the second semester is
recommended for students who have chosen biomedical and
chemical engineering majors (6:4 Principle of Chemistry II) or civil and mechanical engineering majors (60:007 Statics).

Socio-Humanistic Stem

The goal of the socio-humanistic stem is to provide more effective preparation for professional responsibilities by integrating humanities and social sciences into the undergraduate engineering curriculum.

Supportive of this goal a minimum of 16 semester hours of socio-humanistic electives are to be selected by the student with the advisor's approval so as to provide at least six hours of course-work in the social sciences and six hours in humanities.

The social science electives shall consist of appropriate courses from the following departments: anthropology, economics, geography, political science, psychology, sociology, journalism, and social work, or other departments approved by the College faculty.

Students may select courses from departments not included above with the approval of the associate dean for undergraduate programs. To insure an adequate depth of knowledge in a chosen area of study, students shall select a minimum of three semester hours of advanced (100-level) coursework. This material will logically build on the background previously acquired in an elementary course.

The historical-cultural electives will consist of College of Liberal Arts core courses in the historical-cultural area and or appropriate courses from any of the following departments: American civilization, art and art history, classics, English, European literature and thought, history, music, philosophy, religion, Chinese and oriental studies, linguistics, and speech and dramatic art, or other departments approved by the College faculty.

Students may select courses from departments not included above with the approval of the associate dean for undergraduate programs. Students will select a minimum of three semester hours of advanced (100-level) coursework in the historical-cultural area to secure sufficient depth of knowledge in an elected subject of study. Language courses will not satisfy any of the historical-cultural requirements unless the courses are at or beyond the second-year level. Studio courses in art and music will not fulfill the requirement.

Classification of Students

Students in the College of Engineering are classified by the number of semester hours credit which has been earned and are applicable to a bachelor's degree in engineering according to the following table:

- Freshman—less than 28 semester hours
- Sophomore—28 to 55 semester hours
- Junior—56 to 88 semester hours
- Senior—90 or more semester hours

Academic Probation and Good Standing

A student in the College of Engineering who fails to attain the following minimum semester and cumulative grade-point averages based on all work taken at The University of Iowa shall be placed or continued on academic probation:

- Freshman: 1.70
- Sophomore: 1.80
- Junior: 1.85
- Senior: 1.90

A student whose semester and cumulative grade-point average equal or exceed these minimums for his or her classification is considered to be in good standing in the College.

A student will be removed from, or placed on, academic probation only at the end of a semester. A student will not be permitted to register following two consecutive semesters on probation without specific approval. If satisfactory improvement is not made the student may be dismissed from the College.

A student dismissed from the College of Engineering for poor scholarship may petition the associate dean for undergraduate programs for permission to re-enroll after an interval of two regular semesters. Further information may be obtained from the office of the dean of engineering.

Cancellation of Registration

A student in good academic standing who cancels his or her 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 from the associate dean for undergraduate programs.

A student on scholastic probation who cancels his or her registration at any time without good cause will be considered as having been dismissed for poor scholarship.

Cancellation cards for students enrolled in the College will be signed by the associate dean for undergraduate programs only after recommendation of the student's advisor and program chairman.

Credit by Examination

Students who have acquired knowledge in subject matter areas from sources other than course registrations may be granted the opportunity to obtain credit toward graduation by examination. Conditions and limitations of this policy are established by the faculty of the College of Engineering. A student wishing to exercise this opportunity should apply to the associate dean for undergraduate programs.

Pass-Fail Option

Students in the College of Engineering may enroll for no more than two semester hours on a Pass-Fail basis. The Pass-Fail option may not be used for courses taken to fulfill the general education requirement.

Second-Grade-Only Option

A student may elect to repeat a course with only the new grade being counted in his or her GPA. This option can only be elected prior to the time of completing a course for which the repeated course is prerequisite. The option may be applied to a maximum of 16 semester hours of work. Students wishing to exercise this option should apply to the associate dean for undergraduate programs.

The Combined Program

In response to an increasing demand for engineers with strong backgrounds in the humanities, social sciences and business, 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 the College of Engineering. By proper scheduling of
coursework in consultation with advisers from the Colleges of Liberal Arts and Engineering. A student in the combined program can normally meet the baccalaureate degree requirements of both colleges in five academic years.

Cooperative Education Program
Cooperative education involves the integration of academic work with practical experience in an organized program. Participating students spend alternate periods in full-time academic study on campus and in full-time engineering-related employment in business, industry or government.

While the student can earn a substantial portion of college expenses during the work periods, the success of the program depends on the work experience having significant educational value as well. This is assured by careful monitoring of the work experience provided by participating employers and by matching student interest and ability to the work situation.

The insights gained by involvement in the practical application of subject matter studied in the classroom usually results in improved motivation during the study periods with a corresponding improvement in academic record. Another important aspect of the experience gained, although it is difficult to evaluate, is the increased awareness of the many nonacademic considerations involved in any engineering project.

The co-op phase ordinarily begins following the sophomore year and continues until the beginning of the senior year. The total time for the degree program under this option is normally five years and includes at least one full year of work experience. The program is an option available to qualified students on a voluntary basis.

Admission
Freshmen
To qualify for admission to the College of Engineering as a freshman, an applicant must have:

- Completed the American College Test with a composite standard score of 24 or above and a standard score of 24 or above in mathematics;

- Successfully completed at least one and one-half units of algebra, one unit of plane geometry and one-half unit of trigonometry;

- Ranked in the upper one-half of his or her high school graduating class.

High school physics and chemistry are recommended for all applicants.

Transfer Students
The applicant must submit a formal application and official transcript of all college work. Each applicant should have:

- Completed at least one semester of calculus or its equivalent;

- Maintained a cumulative grade-point average of at least 2.25 (C+), based on a four-point marking system.

A maximum of 64 semester hours credit (or the equivalent) from a junior college will be accepted toward the baccalaureate degree.

After reviewing the records of either a freshman or transfer student applicant who does not meet minimum admission requirements, the Director of Admissions may admit the applicant unconditionally, admit him to probation, require a summer session trial enrollment, or deny admission.

Applicants who do not meet all of the criteria for admission to the College of Engineering are automatically considered for admission to the pre-engineering program in the College of Liberal Arts.

Student Organizations and Activities
The College of Engineering student body is organized as the Associated Students of Engineering. This provides a mechanism for planning and carrying out activities involving the entire College such as the annual Open House, MECCA Week and the student-faculty reception for new students. Other college-wide events of general student interest are also handled through the A.S. E. of E.

Engineering students publish their own student journal, the Hawkeye Engineer. All positions are staffed by students, with faculty serving only in an advisory capacity.

Student branches of the American Institute of Chemical Engineers, the American Institute of Industrial Engineers, the American Society of Civil Engineers, the American Society of Mechanical Engineers and the Institute of Electrical and Electronics Engineers are active at Iowa.

The U of I chapter of Tau Beta Pi, an honorary engineering society, gives special recognition to superior students in their junior and senior years. Senior and graduate engineering students who have special ability in research are eligible for election to Sigma Xi; Phi Lambda Upsilon, honorary chemistry and chemical engineering fraternity; Chi Epsilon, honorary civil engineering fraternity;Eta Kappa Nu, honorary electrical engineering fraternity; and Pi Tau Sigma, honorary mechanical engineering fraternity, recognize the work of outstanding students in their respective fields.

Student organizations dedicated to providing support and assistance in the development of more equitable enrollments of women and minorities in the College are the Black Students in Engineering and the student chapter of the Society of Women Engineers. A local chapter of Theta Tau, a national professional engineering fraternity, is active in service to the College and draws its membership from students throughout the College.

Professional Registration
Registration as a professional engineer is governed by the laws of each state. The minimum requirements 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 satisfactory completion of an advanced examination following approved professional experience.

Course Numbering System
The title of each course offered by the College of Engineering is preceded by a three-digit prefix and a three-digit suffix separated
by a colon. The prefix serves to identify the course as an offering by the College of Engineering for a particular curriculum program. The suffix denotes the course level (undergraduate, upper level undergraduate - lower level graduate, graduate), type of course (seminar, topics, research) and the discipline area within the division. All courses are offered by division for the curriculum programs of the College.

The first digit of the prefix is 5 which identifies the course as being offered by the College of Engineering. The second digit of the prefix identifies the division of the College which offers the course according to the correspondence presented below:

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Course Level</th>
<th>Curriculum Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>52</td>
<td>Energy</td>
<td>Engineering</td>
</tr>
<tr>
<td>54</td>
<td>Information</td>
<td>Engineering</td>
</tr>
<tr>
<td>56</td>
<td>Materials</td>
<td>Engineering</td>
</tr>
<tr>
<td>58</td>
<td>Systems</td>
<td>Engineering</td>
</tr>
</tbody>
</table>

The third digit of the prefix identifies the curriculum program for which the division offers the course with the correspondence between the third digit and the curriculum programs as shown below:

<table>
<thead>
<tr>
<th>Code</th>
<th>Program Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Undergraduate Engineering Core Program</td>
</tr>
<tr>
<td>1</td>
<td>Biomedical Engineering</td>
</tr>
<tr>
<td>2</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>3</td>
<td>Civil Engineering</td>
</tr>
<tr>
<td>4</td>
<td>Environmental Engineering</td>
</tr>
<tr>
<td>5</td>
<td>Electrical Engineering</td>
</tr>
<tr>
<td>6</td>
<td>Industrial and Management Engineering</td>
</tr>
<tr>
<td>8</td>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>9</td>
<td>Mechanics and Hydraulics</td>
</tr>
</tbody>
</table>

The three digit suffix of a course number identifies the level and type of course. Generally, the suffix numbers below 100 designate courses primarily for undergraduates, numbers 100 to 199 designate courses for undergraduates and graduates, and numbers 200 and above designate courses primarily for graduates. The table below provides further means of conveying information on the level of study.

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Course Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>201-009</td>
<td>Freshman core program courses</td>
<td></td>
</tr>
<tr>
<td>020-019</td>
<td>Sophomore core program courses</td>
<td></td>
</tr>
<tr>
<td>030-029</td>
<td>Junior core program courses</td>
<td></td>
</tr>
<tr>
<td>030-098</td>
<td>Required courses in undergraduate program</td>
<td></td>
</tr>
<tr>
<td>091-094</td>
<td>Undergraduate professional program seminars</td>
<td></td>
</tr>
<tr>
<td>095-097</td>
<td>Contemporary topics courses for undergraduates</td>
<td></td>
</tr>
<tr>
<td>098</td>
<td>Individual investigation courses for undergraduates</td>
<td></td>
</tr>
<tr>
<td>101-109</td>
<td>Courses for which little or no engineering, science or mathematics background is required</td>
<td></td>
</tr>
<tr>
<td>110-189</td>
<td>Undergraduate elective or lower level graduate course</td>
<td></td>
</tr>
<tr>
<td>190</td>
<td>Readings courses for non-engineering majors</td>
<td></td>
</tr>
<tr>
<td>191-194</td>
<td>Seminars for undergraduates and graduates</td>
<td></td>
</tr>
<tr>
<td>195-197</td>
<td>Contemporary topics courses for undergraduates and graduates</td>
<td></td>
</tr>
<tr>
<td>198</td>
<td>Individual investigations for graduates</td>
<td></td>
</tr>
<tr>
<td>199</td>
<td>M.S. thesis research</td>
<td></td>
</tr>
<tr>
<td>210-289</td>
<td>Upper level graduate courses</td>
<td></td>
</tr>
<tr>
<td>291-294</td>
<td>Seminars for graduates</td>
<td></td>
</tr>
</tbody>
</table>

The courses offered by each division are listed within each division’s section by the prefixes of the suffix with the lowest level course and proceeding to the highest level course with a defined range of the last two digits of the suffix. For example, the courses in the discipline engineering and applied statistics within the Division of Systems Engineering are listed from the numerical range 30-398 with 580.035 Probability and Statistics for Engineering and Physical Sciences through 586.232 Regression Analysis.

Most courses have prerequisites stated in terms of courses at this university. Equivalent academic background may have been obtained by a student through previous coursework at other colleges and universities. The student should consult with the course instructor if there is any question concerning the academic background needed for a particular course, and the student should obtain the consent of the instructor to register in the course. A student may enroll in any course in the College of Engineering if the student receives the consent of the instructor. Consent of the instructor will be based primarily on the mathematics, science and engineering course background of the student and that considered necessary to satisfactorily undertake the coursework.

**Biomedical Engineering**

Program chairman: Kevin R. Rice

Faculty: professors Bruce O. de Jong, Donald J. McDonald, James O. Gammel, Kevin Rice; associate professors Chad O. Chen, David M. Levy, Nathan B. Melle; associate professors Robert Reis; Theodore F. Smith

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 trend 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 professions.

The undergraduate biomedical engineering program is a curriculum option offered within the Bachelor of Science program in engineering.

The curriculum outlined below is built 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 medicine and the health sciences.

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, computer-manufacturing 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 course requirements of the Graduate College and the college of Medicine, Dentistry and Law.

Extensive graduate-level biomedical engineering research activities within the College of Engineering have led to numerous M.S. and Ph.D. degrees. Many engineering college faculty members have joint appointments in the colleges of medicine and dentistry. Being both graduate and graduate engineering students participate actively with college faculty members and their col-

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**295-297** Contemporary topics courses for graduates

**299** Ph.D. research
# Chemical Engineering

**Curriculum**

**Freshman Year**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>4:1</td>
<td>Principles of Chemistry 1</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>1st</td>
<td>6:10</td>
<td>Rhetoric</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>1st</td>
<td>22M:35</td>
<td>Engineering Calculus I</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>1st</td>
<td>580:001</td>
<td>Introduction to Engineering: Design I</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>1st</td>
<td>580:003</td>
<td>Introduction to Engineering: Graphics</td>
<td>2 s.h.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>15 s.h.</strong></td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd</td>
<td>4:6</td>
<td>Elementary Chemistry Laboratory</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>2nd</td>
<td>10:5</td>
<td>Rhetoric or free elective</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>2nd</td>
<td>22M:36</td>
<td>Engineering Calculus II</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>2nd</td>
<td>580:002</td>
<td>Introduction to Engineering: Design II</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>2nd</td>
<td>580:004</td>
<td>Introduction to Engineering: Computa-tion</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>2nd</td>
<td>4:4</td>
<td>Principles of Chemistry II</td>
<td>3 s.h.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>16 s.h.</strong></td>
</tr>
</tbody>
</table>

**Sophomore Year**

**First Semester**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd</td>
<td>22M:37</td>
<td>Engineering Calculus III</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>2nd</td>
<td>520:016</td>
<td>Thermodynamics I</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>2nd</td>
<td>540:011</td>
<td>Dynamic Systems Analysis I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>2nd</td>
<td>560:015</td>
<td>Materials Science I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>2nd</td>
<td>560:017</td>
<td>Mechanics of Solids</td>
<td>4 s.h.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>18 s.h.</strong></td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd</td>
<td>540:023</td>
<td>Electromagnetic Theory</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>2nd</td>
<td>37:3</td>
<td>Principles of Animal Biology</td>
<td>5 s.h.</td>
</tr>
<tr>
<td>2nd</td>
<td>540:012</td>
<td>Dynamic Systems Analysis II</td>
<td>3 s.h.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>16 s.h.</strong></td>
</tr>
</tbody>
</table>

**Junior Year**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd</td>
<td>580:039</td>
<td>Probability and Statistics for Engineering and Physical Sciences</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>3rd</td>
<td>580:021</td>
<td>Principles of Design I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>3rd</td>
<td>520:020</td>
<td>Mechanics of Fluids and Transfer Process</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>3rd</td>
<td>521:031</td>
<td>Elementary Bio-engineering</td>
<td>4 s.h.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>17 s.h.</strong></td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>4th</td>
<td>29:82</td>
<td>Physics I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>4th</td>
<td>4:121</td>
<td>Organic Chemistry I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>4th</td>
<td>580:022</td>
<td>Principles of Design II</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>4th</td>
<td>580:023</td>
<td>Technical electives*</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>4th</td>
<td>580:024</td>
<td>Socio-Humanistic electives</td>
<td>4 s.h.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>16 s.h.</strong></td>
</tr>
</tbody>
</table>

**Senior Year**

**First Semester**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>4th</td>
<td>561:083</td>
<td>Biomedical Engineering Design I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>4th</td>
<td>580:059</td>
<td>Technical electives*</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>4th</td>
<td>580:060</td>
<td>Socio-Humanistic electives</td>
<td>6 s.h.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>15 s.h.</strong></td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>4th</td>
<td>561:084</td>
<td>Biomedical Engineering Design II</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>4th</td>
<td>580:059</td>
<td>Technical electives*</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>4th</td>
<td>580:060</td>
<td>Socio-Humanistic electives</td>
<td>6 s.h.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>15 s.h.</strong></td>
</tr>
</tbody>
</table>

*Each student must take at least three of the five courses listed below, plus nine additional semester hours in appropriate ASHE-approved engineering, biological and/or health science related courses.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>521:146</td>
<td>Biomanufacturing Processes</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>541:185</td>
<td>Biological Systems Analysis</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>541:186</td>
<td>Biomedical Measurements</td>
<td>2-6 s.h.</td>
</tr>
<tr>
<td>561:164</td>
<td>Biomechanics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>561:176</td>
<td>Biomaterials</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

Socio-Humanistic electives must be selected to satisfy College of Engineering policy.

**Chemical Engineering**

Program chairmen: James O. Osher

Faculty: professors Jun-Yi Hwang, James O. Osher, Kyrilow C. Valanis professor emeritus Karl N. Kummer; associate professors Reis Babin and Edwin M. Reinke; Arthur F. Venner; associate professor Han C. Wu

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

Chemical engineering is the art and science of engineering applied to processes in which chemical reactions play a dominant role. One very important application is in the production of engineering materials from basic raw materials.

Courses which have been designed primarily for the chemical engineering program are identified by the digit 2 in the third position of the course number prefix. Course descriptions not provided in this catalog primarily within the section devoted to the Division of Materials Engineering.

**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,
### Curriculum

#### Freshman Year

<table>
<thead>
<tr>
<th>First Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:1 Principles of Chemistry I</td>
</tr>
<tr>
<td>10:1 or 10:3 Elective</td>
</tr>
<tr>
<td>22M:33 Engineering Calculus I</td>
</tr>
<tr>
<td>580:001 Introduction to Engineering: Design I</td>
</tr>
<tr>
<td>580:003 Introduction to Engineering: Graphics</td>
</tr>
</tbody>
</table>

Second Semester

| 4:6 Elementary Chemistry Laboratory | 2 s.h. |
| 10:2 Rhetoric or free elective | 3 s.h. |
| 22M:36 Engineering Calculus II | 4 s.h. |
| 580:002 Introduction to Engineering: Design II | 2 s.h. |
| 580:004 Introduction to Engineering: Computation | 2 s.h. |

**Total (16) s.h.**

#### Sophomore Year

<table>
<thead>
<tr>
<th>First Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>22M:37 Engineering Calculus III</td>
</tr>
<tr>
<td>580:017 Mechanics of Solids</td>
</tr>
<tr>
<td>540:011 Dynamic Systems Analysis I</td>
</tr>
<tr>
<td>540:015 Materials Science I</td>
</tr>
<tr>
<td>Socio-humanistic elective</td>
</tr>
</tbody>
</table>

**Total (18) s.h.**

<table>
<thead>
<tr>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>22M:38 Engineering Calculus IV</td>
</tr>
<tr>
<td>540:025 Electromagnetic Theory</td>
</tr>
<tr>
<td>540:012 Dynamic Systems Analysis II</td>
</tr>
<tr>
<td>562:047 Process Calculations</td>
</tr>
<tr>
<td>530:020 Mechanics of Fluids and Transfer Processes</td>
</tr>
<tr>
<td>4:4 Principles of Chemistry II</td>
</tr>
</tbody>
</table>

**Total (21) s.h.**

#### Junior Year

<table>
<thead>
<tr>
<th>First Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:131 Physical Chemistry I</td>
</tr>
<tr>
<td>29:92 Physics I</td>
</tr>
<tr>
<td>562:048 Design for Energy and Momentum Transfer</td>
</tr>
<tr>
<td>580:021 Principles of Design I</td>
</tr>
<tr>
<td>Technical elective</td>
</tr>
<tr>
<td>562:091 Professional Seminar</td>
</tr>
</tbody>
</table>

**Total (16) s.h.**

### Second Semester

| 4:132 Physical Chemistry II | 3 s.h. |
| 4:143 Advanced Chemistry Laboratory I | 3 s.h. |
| 562:042 Chemical Engineering Thermodynamics | 3 s.h. |
| 562:049 Mass Transfer Operations | 3 s.h. |
| Socio-humanistic elective | 3 s.h. |
| 562:091 Professional Seminar | 0 s.h. |

**Total (15) s.h.**

### Senior Year

<table>
<thead>
<tr>
<th>First Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:121 Organic Chemistry I</td>
</tr>
<tr>
<td>562:051 Chemical Reaction Kinetics</td>
</tr>
<tr>
<td>562:052 Electrics in Design</td>
</tr>
<tr>
<td>562:053 Unit Operations Lab</td>
</tr>
<tr>
<td>Socio-humanistic elective</td>
</tr>
<tr>
<td>562:091 Professional Seminar</td>
</tr>
</tbody>
</table>

**Total (14) s.h.**

### Courses in the Socio-humanistic stem must be selected to satisfy the College of Engineering policy.

*Students who have chosen chemical engineering as a major at the beginning of the second semester, freshman year, should take 4:004 (Principles of Chemistry II) in that semester, reducing the load in the second semester of the sophomore year.

### Graduate Program

The programs leading to the M.S. and Ph.D. are more flexible than the undergraduate program. The emphasis is on research since most of the opportunities for graduate are in industrial research and development. 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, nuclear, transport phenomena, constitutive equations, particle characterization and use, and biomedical engineering. More recently the faculty have embarked on research in such interdisciplinary areas as chemomechanics and 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 guidance self-study plan.

In addition to fulfilling the general degree requirements outlined in the "Graduate College" section of the Catalog, a Ph.D. 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 program. Students who wish to be admitted to the program are asked to take the GRE Advanced Examination.

### Civil Engineering

**Program Coordinator:** Harleen Kow

**Degrees offered:** B.S., M.S., Ph.D.

Civil engineering has traditionally been concerned with facilities which are both large-scale and essential to modern life. Civil engineering projects include transportation systems to move masses of people and products, such as bridges, highways, public transit systems, subways, harbors, airports, seaports and even spaceports; large scale structures and office buildings to provide enclosed working and living space; environmental and hydraulic 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 adapt to shifting demands.

In planning and design, the civil engineers work with architects, landscape architects, planners, economists, financiers, sociologists, lawyers and other specialists as members of the design team. Some civil engineers work in engineering offices; others may be 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 Program

The course of study in civil engineering builds on the College of Engineering core curriculum and is designed to give the student the broad educational background essential to modern civil engineering practice. Electives in the senior year permit additional concentration in such areas of specialization as structural and foundation engineering, environmental engineering, hydraulic engineering, and transportation engineering.

### Curriculum

#### Freshman Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>400:001</td>
<td>Principles of Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>101:003</td>
<td>Principles of Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>224:035</td>
<td>Engineering Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>500:003</td>
<td>Engineering Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>240:003</td>
<td>Linear Algebra with Applications</td>
<td>3</td>
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</tbody>
</table>

**Total:** 15 s.h.

#### Second Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>400:006</td>
<td>Elementary Chemistry Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>101:002</td>
<td>Analytical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>224:036</td>
<td>Engineering Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>500:007</td>
<td>Statics</td>
<td>2</td>
</tr>
<tr>
<td>580:002</td>
<td>Introduction to Engineering: Design I</td>
<td>2</td>
</tr>
<tr>
<td>580:004</td>
<td>Introduction to Engineering: Computation</td>
<td>2</td>
</tr>
</tbody>
</table>

**Total:** 15 s.h.

### Sophomore Year

#### First Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>224:037</td>
<td>Engineering Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>520:018</td>
<td>Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>540:011</td>
<td>Dynamic Systems Analysis I</td>
<td>3</td>
</tr>
<tr>
<td>560:010</td>
<td>Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>500:015</td>
<td>Materials Science I</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total:** 17 s.h.

#### Second Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>224:038</td>
<td>Engineering Calculus IV</td>
<td>4</td>
</tr>
<tr>
<td>520:020</td>
<td>Mechanics of Fluids and Transfer Processes</td>
<td>4</td>
</tr>
<tr>
<td>540:012</td>
<td>Dynamic Systems Analysis II</td>
<td>3</td>
</tr>
<tr>
<td>560:019</td>
<td>Mechanics of Deforciable Bodies</td>
<td>3</td>
</tr>
<tr>
<td>580:021</td>
<td>Socio-Humanistic elective</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total:** 17 s.h.

### Junior Year

#### First Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>225:039</td>
<td>Probability and Statistics for Engineering and Physical Sciences</td>
<td>3</td>
</tr>
<tr>
<td>523:150</td>
<td>Principles of Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>540:025</td>
<td>Electromagnetic Theory</td>
<td>4</td>
</tr>
<tr>
<td>563:031</td>
<td>Structural Analysis I</td>
<td>4</td>
</tr>
<tr>
<td>563:032</td>
<td>Professional Seminar**</td>
<td>6</td>
</tr>
<tr>
<td>580:021</td>
<td>Principles of Design I</td>
<td>3</td>
</tr>
<tr>
<td>583:073</td>
<td>Transportation Engineering I</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total:** 16 or 17 s.h.

#### Second Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>29:002</td>
<td>Physics I</td>
<td>3</td>
</tr>
<tr>
<td>523:065</td>
<td>Flow Systems in Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>563:035</td>
<td>Structural Design I</td>
<td>3</td>
</tr>
<tr>
<td>563:091</td>
<td>Professional Seminar**</td>
<td>6</td>
</tr>
<tr>
<td>580:022</td>
<td>Principles of Design II</td>
<td>3</td>
</tr>
<tr>
<td>583:074</td>
<td>Transportation Engineering II</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Socio-Humanistic elective</td>
<td>4</td>
</tr>
</tbody>
</table>

**Total:** 16 s.h.

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**Civil Engineering**

[297]
Senior Year
First Semester
563:066  Soil Mechanics 3 s.h.
563:091  Professional Seminar** 0 s.h.
Design elective*** and/or technical elective(s) 6 s.h.
Deferred sequence* 3 or 4 s.h.
Socio-humanistic elective 3 s.h.
Total 15 or 16 s.h.

Second Semester
563:091  Professional Seminar** 2 s.h.
Design elective*** and/or technical elective(s) 6 s.h.
Deferred sequence* 3 s.h.
Socio-humanistic electives 6 s.h.
563:097  Senior Project 1 s.h.
Total 16 s.h.

* A sequence 523:065, 150 or 563:031, 035 or 563:073, 074 should be deferred to the senior year.
** Registration in 563:091 Professional Seminar is required in each semester of the junior and senior years.
*** One design elective is required in the senior year. Design electives are:

First Semester
523:151  Hydraulic Systems Design in Environmental Engineering
563:135  Structural Design II

Second Semester
529:164  Hydraulic Design
563:173  Transportation Systems Design

Course in the Socio-humanistic area must be selected to satisfy the College of Engineering policy.

Graduate Programs
Work is offered in the general areas of structural engineering, geotechnical engineering, traffic engineering and transportation planning. Programs in environmental engineering and science and in hydraulic engineering are also offered in the College of Engineering; these programs are listed separately in the catalog.

Master of Science
The master of science programs in civil engineering are designed to permit further concentration in the area of the student's choice. Each program may be slanted toward design, analysis, research or a combination of these. Graduates of these programs are placed in advanced technical positions in industry, consulting firms or in government, or they may continue their graduate study if qualified. Current and projected demand for M.S. graduates is excellent. There is considerable flexibility in the curriculum for the master's degree. The plan of study must include a minimum of 30 semester hours, with or without thesis as determined by the candidate and his or her graduate committee.

Doctor of Philosophy
The doctoral degree is granted primarily on the basis of achievement and has no prescribed curriculum. The candidate will normally need at least three years of full-time work beyond the baccalaureate degree. He or she must pass written and oral comprehensive examinations and must prepare and defend a dissertation which contributes to knowledge in the field. No foreign language is required.

The Department cooperates in interdisciplinary doctoral programs with the Programs in Applied Mathematical Sciences (see Graduate College).

Special Faculty Strengths
The American Council on Education's most recent ranking of civil engineering departments offering graduate studies placed the Iowa Program of Civil Engineering among the top 40 of the more than 200 departments in the nation.

Admission requirements
The prerequisite for admission to candidacy for the master's degree is normally the earning of a baccalaureate degree in civil engineering or a physical science, with a cumulative grade point average of 2.5 (A=4). Candidates who do not have an engineering degree or whose grade point averages are slightly lower are invited to correspond regarding admission possibility. 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 research assistantships are available; selection of recipients is usually based on scholarly achievement and research interest.

Electrical Engineering
Undergraduate program statement: Donald M. Lere,
Graduate program chairman: Dong H. Cho
Faculty: professors Ding H. Cho, Carl D. Sivin, John B. Quin, George M. Lawen, Kurt E. Lengenberg, John P. Johnstone; associate professors Kent D. Alton, Donald H. Lere, Non E. Loh, Michael J. Matza, Stephen M. Reeder; assistant professor Rodney J. Baslok
Degree offered: B.S., M.S., Ph.D.

Undergraduate Program
The undergraduate program provides the basis for professional training in electrical 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, semi-conductor, 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, controlling, 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 an adequate background of circuits, control systems, electromagnetics, communication theory, electronics and design, in addition to the basic engineering core of mathematics, engineering design, engineering science and humanities. Techni-
cal electives and advanced programs are offered in biomedical systems, electronic circuits, signal processing, digital and control systems, applied physics, and solid state devices.

**Curriculum**

**Freshman Year**

**First Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:1 or 10:3</td>
<td>Rhetoric</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>22M:35</td>
<td>Engineering Calculus I</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>4:1</td>
<td>Principles of Chemistry I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>580:001</td>
<td>Introduction to Engineering Design I</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>580:003</td>
<td>Introduction to Engineering Graphics</td>
<td>2 s.h.</td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:2</td>
<td>Rhetoric or free elective</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>22M:36</td>
<td>Engineering Calculus II</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>4:6</td>
<td>Elementary Chemistry Laboratory</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>580:002</td>
<td>Introduction to Engineering Design II</td>
<td>2 s.h.</td>
</tr>
</tbody>
</table>
| 580:004     | Introduction to Engineering Computation | 2 s.h. |}

**Sophomore Year**

**First Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>560:017</td>
<td>Mechanics of Solids</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>22M:37</td>
<td>Engineering Calculus III</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>520:016</td>
<td>Thermodynamics I</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>560:015</td>
<td>Materials Science I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>540:011</td>
<td>Dynamic Systems Analysis I</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-Humanistic electives*</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>22M:38</td>
<td>Engineering Calculus IV</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>540:010</td>
<td>Logic and Digital Systems</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>540:012</td>
<td>Dynamic Systems Analysis II</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

**Junior Year**

**First Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>29:3</td>
<td>Physics I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>225:39</td>
<td>Probability and Statistics for Engineering and Physical Sciences</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>545:040</td>
<td>Principles of Electrical Engineering Design I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>545:040</td>
<td>Electronic Circuits I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>545:050</td>
<td>Communication Systems</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>545:091</td>
<td>Professional Seminar**</td>
<td>0 s.h.</td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-Humanistic elective*</td>
<td>4 s.h.</td>
<td></td>
</tr>
<tr>
<td>545:081</td>
<td>Principles of Electrical Engineering Design II</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>545:041</td>
<td>Electronic Circuits II</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>545:060</td>
<td>Control Systems</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>545:091</td>
<td>Professional Seminar**</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

18 s.h.

**Senior Year**

**First Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-Humanistic elective*</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>545:070</td>
<td>Electrical Engineering Materials and Devices</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>545:082</td>
<td>Principles of Electrical Engineering Design III</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>545:091</td>
<td>Professional Seminar**</td>
<td>0 s.h.</td>
</tr>
<tr>
<td>Science core elective***</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>Technical electives</td>
<td>4 s.h.</td>
<td></td>
</tr>
</tbody>
</table>

16 s.h.

**Second Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-Humanistic elective*</td>
<td>6 s.h.</td>
<td></td>
</tr>
<tr>
<td>545:081</td>
<td>Principles of Electrical Engineering Design IV</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>545:091</td>
<td>Professional Seminar**</td>
<td>0 s.h.</td>
</tr>
<tr>
<td>Technical electives</td>
<td>3 s.h.</td>
<td></td>
</tr>
</tbody>
</table>

18 s.h.

*Socio-Humanistic elective courses must be selected to satisfy the minimum requirement for graduation.

**Science core elective**:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>520:020</td>
<td>Mechanics of Fluids and Transfer Processes</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>560:019</td>
<td>Mechanics of Deformable Bodies</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>580:027</td>
<td>Engineering Management Science</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>Biological science course</td>
<td>3 s.h.</td>
<td></td>
</tr>
</tbody>
</table>

**Graduate Program**

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 Ph.D. studies. Excellence in scholarship and research is stimulated through close contact with the faculty throughout the period of graduate study and through programs tailored to fit individual needs. Each graduate student is regarded as an important member of the program whose contributions are highly valued. Each student selects his or her own advisor, and together with the advisor plans his or her individual program, with freedom of choice bounded only by a few broad guidelines imposed by the Graduate College and by the program. Foreign languages and research tools, for example, are not required by
either the Graduate College or by the program but are introduced into the program by the student and the graduate committee that they are appropriate in light of the particular student's goals.

The program recognizes the student's desire to complete the graduate program as quickly as possible without sacrifice of quality, and encourages the student to proceed toward graduation in a timely manner.

The basic program, which is fundamental to electrical engineering, has a wide application, and this has resulted in interdisciplinary research within the program. 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.

Specialized studies and research within the program are centered in the following areas: digital signal processing, analysis and synthesis of speech, network theory, classical and optical control theory, linear and nonlinear system theory, stochastic systems, communication networks, filtering and estimation theory, system identification, computer systems, communication systems, digital control, plasma physics and electronic technologies.

The College of Engineering's Guided Self-Study Program enables students in neighboring cities to take courses while employed full-time. Research can be carried out by these students during the summer and through the independent study option.

In cooperation with the Quad Cities Graduate Study Center, the program offers an extension program in electrical engineering in the Quad Cities area.

Master 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 adviser and the graduate committee. This must include at least 12 semester hours of coursework in electrical engineering, not including courses required for the thesis. The student must maintain a minimum of 3.0 grade point average. The student must also pass the qualifying examination in mathematics and physics. The thesis is a major work of original research. The student must complete a thesis in electrical engineering. This independent study is to be a special project completed under the supervision of the student's program adviser.

Doctor of Philosophy
Requirements other than those stated in the University's graduate manual may also be arranged with the Department.

Successful completion of the Ph.D. qualifying examination;
Successful completion of the Ph.D. comprehensive examination;
Successful completion of a research program;
Successful completion of a final oral defense of the thesis.

Financial Aid
A number of fellowships, traineeships, assistantships, scholarships and industrial grants are available to graduate students who qualify. These are awarded on a competitive basis.

Admission Requirements
The normal graduate admission requirement of the program is at least a 2.7 grade-point average on all courses in electrical engineering, mathematics and physics for M.S. students, 3.0 for Ph.D. students. An M.S. student with a grade-point average less than 2.7, but better than 2.3 in 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.

Engineering
Program chairman: George B. Lane
Faculty: professors J. Wayne Bunge, Bob S. Hwang, George Lane, Howard McCormick, associate professors James Anderson, assistant professor Rodney Kim
Degree offered: M.S.

The increasing emphasis on interdisciplinary and non-traditional career objectives emphasizes the desirability of having available a degree program which combines a strong background in engineering fundamentals with the flexibility of choosing a major elective sequence to achieve specific educational goals of individual students. The primary objective of the Bachelor of Science in Engineering program is to provide such an option for students whose specific goals cannot be achieved within the framework of any of the designated degree programs.

The breadth and depth of required engineering core courses assures a sound engineering background. The elective sequence can be used to develop those areas of special interest to the student who led to the choice of the designated engineering program.

Undergraduate Program
The objective of the undergraduate degree program is to provide the opportunity for each student to develop an individually-tailored program. However, a proper balance between breadth and depth must be maintained in order to result in a well balanced education. To accomplish this, the curriculum contains a strong base of engineering core courses with the remainder of the program consisting of a guided elective sequence. The specified portion of the program contains sufficient breadth and depth in fundamentals to assure an excellent background in engineering fundamentals.

The major portion of the elective program is scheduled for the final three semesters and builds from background acquired in the engineering core courses. This elective sequence is planned in consultation with an advisor to achieve a coordinated program.
Curriculum

Freshman Year

First Semester

4:1 Principles of Chemistry I 3 s.h.
10:1 or 10:3 Rhetoric 4 s.h.
22M:35 Engineering Calculus I 4 s.h.
380:001 Introduction to Engineering: Design I 2 s.h.
380:003 Introduction to Engineering: Graphics 2 s.h.
15 s.h.

Second Semester

4:6 Elementary Chemistry Laboratory 2 s.h.
10:2 Rhetoric or free elective 3 s.h.
22M:36 Engineering Calculus II 4 s.h.
380:002 Introduction to Engineering: Design II 2 s.h.
380:004 Introduction to Engineering: Computation 2 s.h.
13 s.h.

Sophomore Year

First Semester

22M:37 Engineering Calculus III 4 s.h.
520:016 Thermodynamics I 4 s.h.
540:011 Dynamic Systems Analysis I 3 s.h.
550:015 Materials Science I 3 s.h.
550:017 Mechanics of Solids 4 s.h.
18 s.h.

Second Semester

22M:38 Engineering Calculus IV 4 s.h.
540:012 Dynamic Systems Analysis II 3 s.h.
560:019 Mechanics of Deformable Bodies 3 s.h.
540:025 Electromagnetic Theory 4 s.h.
560:018 Introduction to Engineering: Mechanical Design 3 s.h.
17 s.h.

Junior Year

First Semester

380:039 Probability and Statistics for Engineering 3 s.h.
29:82 Physics I 3 s.h.
520:020 M
chanics of Fluids and Transfer Processes 4 s.h.
380:021 Principles of Design I 3 s.h.
16 s.h.

Second Semester

29:83 Physics II 3 s.h.
520:022 Principles of Design II 3 s.h.
520:027 Engineering Management Science 3 s.h.
Technical elective 3 s.h.
Socio-humanistic elective 4 s.h.
16 s.h.

Senior Year

First Semester

Design course 3 s.h.
Technical electives 12 s.h.
Socio-humanistic elective 3 s.h.
18 s.h.

Second Semester

Design course 3 s.h.
Technical electives 9 s.h.
Socio-humanistic elective 3 s.h.
15 s.h.

Socio-humanistic elective courses must be selected to satisfy the College of Engineering policy.

Environmental Engineering

Program chairman: Richard B. Drye


Degrees Offered: M.S., Ph.D.

The first advanced degree in the environmental engineering area was awarded by the College of Engineering in 1927. Since then, nearly 300 M.S. and Ph.D. degrees in environmental engineering have been awarded.

Prior to 1968, the graduate program in environmental engineering was open only to individuals holding an undergraduate degree in engineering. Since 1968, individuals with undergraduate degrees in fields related to environmental engineering or a basic science have been accepted for graduate work in environmental engineering.

The Environmental Engineering Program now has two basic streams, one engineering and the other applied science. Much of the coursework and research activity is common to both streams.

The Program maintains a heavy emphasis on interdisciplinary research and academic activities through close working relationships with other programs and colleges on campus, including the Iowa Institute of Hydraulic Research, the Institute of Agricultural Medicine and Environmental Health, the Institute of Urban and Regional Planning, and the Colleges of Business, Law and Liberal Arts.

Coursework and research emphases are designed to enable selection of a broad, general program of study or specialization in one of three areas: water quality management, air quality management or solid waste management. Through the appropriate selection of elective courses, students may emphasize the analysis of environmental systems.
and design of pollution control facilities, water resources, en-
vironmental planning, the assessment of environmental impacts or
other disciplines of importance in the broad area of environmental
quality control.

Laboratory and other facilities available in the Environmental
Engineering Program are described in the Division of Energy
Engineering section of this catalog. Courses which have been
designated primarily for the Environmental Engineering Program
are identified by the digi tag in the third position of the course
number prefix. Course descriptions are provided in this catalog
within the section devoted to the Division of Energy Engineering.

Master of Science
The master's degree may be earned on either a thesis or non-thesis
basis. The thesis program requires a minimum of 30 semester
hours of credit. This includes a minimum of 24 s. h. of coursework
and 6 semester hours of credit for research. The non-thesis
program requires a minimum of 36 semester hours of credit.
Twenty-three semester hours of the total must be earned through
graduate-level coursework. A major report on an approved topic
is also required for the non-thesis program, with 3 semester
hours of credit allowed for the report.

The minimum undergraduate grade-point average requirement
for regular admission to the program is 2.5. Conditional admis-
sion may be allowed for individuals with grade-point averages
as low as 2.3. If admitted on condition, students must achieve a
minimum grade-point average of 2.7 on the first 12 semester
hours of graduate coursework. Regular students who fail to maintain
a grade-point average of 2.7 are placed on academic probation.
Candidates for the degree are required to pass a comprehensive
written and oral examination at the end of their program. The
emphasis of the written examination is on previous coursework
and related topics. The oral examination is conducted by the
student's advisory committee and emphasizes topics related to the
thesis or major report.

Doctor of Philosophy
The doctoral program is aimed at developing both a breadth and
depth of competence in environmental engineering and applied
science. This is accomplished through coursework and research.
No set package of courses is required for the Ph.D. Each
program is developed individually to build on the student's back-
ground and to develop new areas of competence.

A master's degree with thesis in either engineering or a basic
science is considered a prerequisite to the doctoral program.
Exceptions may be made for individuals who have a master's
degree without thesis but who have outstanding back-
grounds in other respects.

The minimum grade-point average for admission to the doctoral
program is 3.2 based on previous graduate work. Conditional
admissions are not allowed. To remain in good standing, doctoral
students must achieve a minimum grade-point average of 3.0 for
the first 12 semester hours of graduate courses taken at The
University of Iowa and must maintain a grade-point average of
3.2 prior to admission to candidacy for the degree.

The Ph.D. degree requires a minimum of 72 semester hours of
credit beyond the basic undergraduate degree. Up to 18 semester
hours of this total may be applied to thesis research. A minimum
of one year of on-campus residency is required.

Doctoral students are required to pass both written and oral
comprehensive examinations prior to formal admission to can-
ididy for the degree. These examinations are conducted at a time
which is customarily all of the student's coursework has been com-
pleted. These examinations cover previous coursework and rel-
ated topics, including the student's research project. Prior to award
of the degree, doctoral candidates must successfully defend their
dissertation before an oral examining committee.

Financial Aid
Financial aid is available through research and teaching assis-
tantships, fellowships, and direct employment on contractual re-
search projects and studies conducted through the Environmental
Engineering Program.

Industrial and Management Engineering
Program chairman: J.M. Lüttschwager
Faculty: professors J.W. Dinger, J.A. Lüttschwager, J.B. Simons; associate
professors E.M. Middlekauf, J.S. Ruby, master professor D.L. Bricker; lecturers
C.V. Blech, instructors D.W. Nabet, I.D. Popp, J.W. Simons
Degrees offered: B.S., M.S., Ph.D.

The industrial and management engineering has many opportunities
for employment and service in industrial, governmental, research and
public service organizations. Employment opportunities are
among the most varied in the engineering field. The industrial and
management engineer may hold a staff position in which he is
advise to management, or he may be in a line unit participating
directly in decision making. His job title might be operations
analyst, industrial engineer, systems analyst or engineer,
operations research analyst, internal consultant, supervisor or
manager. He may be employed by a manufacturing firm, a
government agency or a service organization such as an airline,
bank, hospital or university.

In general, the industrial and management engineer is concerned
with the analysis, design and implementation of systems involving
the optimal use of resources—human, material and financial.
The systems involved may range from small subsystems to extremely
large systems. In order to accomplish these varying activities the
industrial and management engineer is skilled in mathematics,
physics, electronics, science, management and human relations, as well as in
computer systems, economics, optimization and systems analysis and
design methods. Both undergraduate and graduate programs
in Industrial and Management Engineering are designed to provide
courses in these areas, while at the same time offering the student
an opportunity to specialize in an area of his choice.

Undergraduate Program
The undergraduate curriculum in industrial engineering requires a
strong foundation in courses in management and engineering
science, mathematics, design, social sciences and humanities.
Advanced courses include specialty courses in manufacturing,
operations research, statistics, human engineering and computa-
tion. An undergraduate handbook, describing the program in greater
detail, is available upon request.
## Curriculum

### Freshman Year

<table>
<thead>
<tr>
<th>First Semester</th>
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</thead>
<tbody>
<tr>
<td>4/1 Principles of Chemistry I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>10/1 or 10:3 Rhetoric</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>23M/035 Engineering Calculus I</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>580/001 Introduction to Engineering: Design I</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>580/002 Introduction to Engineering: Graphics</td>
<td>2 s.h.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15 s.h.</strong></td>
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</table>

<table>
<thead>
<tr>
<th>Second Semester</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4:6 Elementary Chemistry Laboratory</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>++10:2 Rhetoric or free elective</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>22M/036 Engineering Calculus II</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>580/002 Introduction to Engineering: Design II</td>
<td>2 s.h.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14 s.h.</strong></td>
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</table>

### Sophomore Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>560/015 Materials Science I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>580/027 Engineering Management Science</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>23M/037 Engineering Calculus III</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>540/011 Dynamic Systems Analysis I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>560/017 Mechanics of Solids</td>
<td>4 s.h.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>17 s.h.</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Second Semester</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>567/070 Materials Science II</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>**** Economics elective</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>23M/038 Engineering Calculus IV</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>540/012 Dynamic Systems Analysis II</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>520/016 Thermodynamics I</td>
<td>4 s.h.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>17 s.h.</strong></td>
</tr>
</tbody>
</table>

### Junior Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>566/071 Materials Processing I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>586/140 Qualitative Methods</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>225/039 Probability and Statistics for Engineering and Physical Sciences</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>580/021 Principles of Design I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>540/025 Electromagnetic Theory</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>586/091 Professional Seminar</td>
<td>0 s.h.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16 s.h.</strong></td>
</tr>
</tbody>
</table>

### Second Semester

| 29/082 Physics I | 3 s.h. |
| 586/141 Introduction to Operations Research | 3 s.h. |
| 580/022 Principles of Design II | 3 s.h. |
| 586/091 Professional Seminar | 1 s.h. |
| **Total** | **17 s.h.** |

### Senior Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>*** Science core elective</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>586/144 Information Systems Design</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>581/156 Psychology in Management</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>586/121 Design of Work Methods</td>
<td>4 s.h.</td>
</tr>
<tr>
<td><strong>Technical elective</strong></td>
<td><strong>4 s.h.</strong></td>
</tr>
<tr>
<td>586/091 Professional Seminar</td>
<td><strong>0 s.h.</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16 s.h.</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Second Semester</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technical elective</strong></td>
<td><strong>3 s.h.</strong></td>
</tr>
<tr>
<td><strong>Technical elective</strong></td>
<td><strong>3 s.h.</strong></td>
</tr>
<tr>
<td>581/155 Human Engineering</td>
<td><strong>3 s.h.</strong></td>
</tr>
<tr>
<td>586/133 Quality Control, Reliability and Engineering Statistics</td>
<td><strong>3 s.h.</strong></td>
</tr>
<tr>
<td>586/091 Professional Seminar</td>
<td><strong>1 s.h.</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16 s.h.</strong></td>
</tr>
</tbody>
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**Strongly recommended social science electives**

**Program courses satisfying technical elective requirements include:**

- 587/101 Communications in Industry I | 3 s.h. |
- 586/124 Operational Systems Design | 3 s.h. |
- 586/128 Engineering Administration I | 3 s.h. |
- 586/142 Production Inventory Models | 3 s.h. |
- 586/143 Quantitative Investment Analysis | 3 s.h. |
- 586/147 Sequencing and Scheduling | 3 s.h. |
- 586/149 Digital Systems Simulation I | 3 s.h. |
- 586/147 Advanced Managerial Psychology | 3 s.h. |

**The science core elective may be selected from:**

- 29/083 Physics II | 3 s.h. |
- 586/019 Mechanisms of Deformable Bodies | 3 s.h. |
- 520/030 Mechanics of Fluids and Transfer Processes | 4 s.h. |

or a biological science course, such as

- 52/031 Elementary Bio-Engineering | 3 s.h. |

**The economics elective may be selected from:**

- 62/100 Price, Employment and Production Theory | 4 s.h. |
- 68/173 Managerial Economics | 3 s.h. |
- 68/103 Microeconomics | 3 s.h. |
- 68/111 Labor-Manpower Economics | 3 s.h. |
The two historical-cultural electives must be selected to form a sequence of the courses from several departments of the College of Liberal Arts. These departments include American Civilization, Art and Art History, Classics, English, European Literature and Thought, History, Music, Philosophy, Religion, Chinese and Oriental Studies, Linguistics, and Speech and Dramatic Arts. At least the second course should be at the 100 level.

++ Students not qualifying for direct entry into 10:1 Rhetoric and 10:2 Rhetoric in lieu of 10:3 and the second semester freshman elective course.

Graduate Program

The goal of the Industrial and Management Engineering graduate program at both the M.S. and Ph.D. levels is to provide a modern, highly flexible curriculum of graduate studies. Each student's course of study will be based on the student's background, career objectives, and sound academic practice. Program faculty have research interests in areas related to engineering management and human factors; operations research, computing and applied statistics; materials processing and transportation.

Students who have completed their basic education and human factors may be developed from any Division of Systems Engineering courses offered mainly by 1. & 5. M.E. program faculty. M.S. students desiring more general programs may combine these emphases at the M.S. level, while those desiring more specialization in applied statistics, computing, or materials processing may accumulate these experiences through the combination of 1. & 5. M.E. program courses and appropriate electives from other programs and departments of the university. Ph.D. student programs consist of the areas of operations research and applied statistics or engineering management and human factors. Graduate students with special interest in law or transportation may participate in programs which are jointly administered with the College of Law and Program in Urban Transportation. A graduate handbook, describing the program in greater detail, is available upon request.

Master of Science Degree

Students may be admitted from accredited baccalaureate curricula in any engineering discipline and the mathematical or physical sciences with at least grade point average of 2.50 or 4.00 and/or an acceptable score on the Graduate Record Examination (typically, at least 450 Verbal, 650 Quantitative). Students may be considered for conditional admission with a 2.50 or 4.00 grade point average and lesser GRE scores. Students from business or social science programs who have adequate mathematical preparation may also be considered for regular or conditional admission. The student on conditional status must achieve regular status within two sessions of registration by attaining a grade point average of at least 3.75 and regular acceptance by the I. & M.E. program faculty.

The minimum M.S. program requires 30 semester hours of coursework and research. Students may choose either a thesis or a non-thesis program. Most students, however, are encouraged to obtain the master's degree with thesis. Students desiring eventual admittance to Ph.D. study are especially advised to select the thesis option. A tentative plan of study for each student is determined through consultation with his advisor; the final plan of study is reviewed by the student's examining committee, approved by the I. & M.E. program chairman and by the Graduate College Dean.

Entering students in all programs will find some background in computer programming and probability and statistics helpful. Those enrolling in the operations research program will also find previous work in matrix theory helpful, while engineering management and human factors students should find elementary psychology and engineering economics useful preparation. Compensating course work may be required for students with non-engineering backgrounds.

To be eligible for the M.S. degree, the student is required to maintain a minimum grade point average of 3.00 or an acceptable score on the Graduate Record Examination (typically, at least 500 Verbal, 700 Quantitative). Students may also be admitted from business or social science programs on an individual basis. Students with Ph.D. objectives, who enter with a 3.75 degree are usually first admitted to the M.S. program.

All doctoral programs in the Graduate College must contain a minimum of 72 total hours of graduate work and include at least two semesters of residence. Typically Ph.D. programs in I. & M.E. consist of at least 90 hours of study including research for the dissertation. Part time Ph.D. study is discouraged. There is no foreign language requirement.

Admission to degree candidacy will require a minimum grade point average of 3.25 on all graduate work taken at the University of Iowa and the demonstration of capability for individual achievement. Upon completion of the requisite work specified by his advisor and examining committee with the GPA stipulated above, and upon recommendation of his advisor, the student will be admitted to the comprehensive examination. During this examination, which includes both written and oral parts, the student will be expected to demonstrate his ability to synthesize and analyze complex information. 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 successfully completed this examination, the student is accepted as a candidate for the Ph.D. and normally has only to complete and defend his dissertation.

Extension and Guided Self-Study

In cooperation with the Extension Div., the program faculty will periodically offer evening classes in Cedar Rapids, Des Moines, or the Quad Cities. The program chairman should be consulted for offerings in any semester. Program faculty also offer a limited guided self-study program for off-campus students.

Financial Aid

Financial support is available primarily through research and teaching assistantships. Stipends currently vary from $1950 to $3440 for an academic year of graduate study. Awards are based
on the student's academic record and upon an assessment of the student's potential contribution to the research and teaching goals of the program.

**Mechanical Engineering**

Program chairman: J. Merle Trueman

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

In addition to providing the student with a sound preparation for entering the practice of mechanical engineering, an effort is made to provide for breadth in both technical and non-technical areas. This is done by careful planning for each student's elective courses and by encouraging individual student projects. Areas of concentration offered for graduate study and research include thermal science, energy, mechanical systems, heat transfer, gas dynamics, and automatic control.

**Undergraduate Program**

The undergraduate program in mechanical engineering prepares the student for a career in engineering with an emphasis on the technical areas of thermal energy systems and the conversion of thermal energy to mechanical and electrical energy, mechanical systems and machines, and design and control of these systems.

The undergraduate curriculum provides a substantial number of electives in both the technical and non-technical areas. In consultation with his or her advisor, a student can plan to develop skills to meet individual goals within the framework of the curriculum. All upperclassmen are strongly encouraged to undertake individual projects involving either an experimental or analytical design solution to a current problem.

**Curriculum**

**Freshman Year**

<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>4:1 Principles of Chemistry I</td>
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<tr>
<td>10:1 or 10:3 Physics</td>
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<tr>
<td>22M:35 Engineering Calculus I</td>
</tr>
<tr>
<td>580:003 Introduction to Engineering: Design</td>
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<tr>
<td>580:003 Introduction to Engineering: Graphs</td>
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<tr>
<td><strong>Total</strong></td>
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<table>
<thead>
<tr>
<th>Second Semester</th>
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</thead>
<tbody>
<tr>
<td>4:6 Elementary Chemistry Laboratory</td>
</tr>
<tr>
<td>12:2 Rheology or free elective</td>
</tr>
<tr>
<td>22M:36 Engineering Calculus II</td>
</tr>
<tr>
<td>580:003 Introduction to Engineering: Design</td>
</tr>
<tr>
<td>580:004 Introduction to Engineering: Computations</td>
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<tr>
<td>560:007 Statics</td>
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<td><strong>Total</strong></td>
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**Sophomore Year**

<table>
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<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>22M:37 Engineering Calculus III</td>
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<tr>
<td>540:010 Dynamics</td>
</tr>
<tr>
<td>540:011 Dynamic Systems Analysis I</td>
</tr>
<tr>
<td>560:015 Materials Science I</td>
</tr>
<tr>
<td>522:016 Thermodynamics I</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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<table>
<thead>
<tr>
<th>Second Semester</th>
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<tbody>
<tr>
<td>22M:38 Engineering Calculus IV</td>
</tr>
<tr>
<td>540:012 Dynamic Systems Analysis II</td>
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<tr>
<td>540:025 Electromagnetic Theory</td>
</tr>
<tr>
<td>560:019 Mechanics of Deformable Bodies</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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**Junior Year**

<table>
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<tr>
<th>First Semester</th>
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</thead>
<tbody>
<tr>
<td>225:39 Probability and Statistics for Engineering and Physical Sciences</td>
</tr>
<tr>
<td>29:82 Physics I</td>
</tr>
<tr>
<td>580:027 Principles of Design I</td>
</tr>
<tr>
<td>520:020 Mechanics of Fluids and Transfer Processes</td>
</tr>
<tr>
<td>528:091 Professional Seminar</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second Semester</th>
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</thead>
<tbody>
<tr>
<td>29:83 Physics II</td>
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<tr>
<td>580:022 Principles of Design II</td>
</tr>
<tr>
<td>528:080 Experimental Engineering</td>
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<tr>
<td>528:040 Thermodynamics II</td>
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<tr>
<td>528:091 Professional Seminar</td>
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<td><strong>Total</strong></td>
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**Senior Year**

<table>
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<th>First Semester</th>
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<tr>
<td>528:042 Heat Transfer</td>
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<tr>
<td>568:062 Mechanical Systems Design I</td>
</tr>
<tr>
<td>528:091 Professional Seminar</td>
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<tr>
<td><strong>Total</strong></td>
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</table>
Mechanics and hydraulics

Second Semester

528-082 Mechanical Engineering Design II 3 s.h.
528-091 Professional Seminar 0 s.h.
Technical electives 9 s.h.
Socio-humanistic elective 3 s.h.
Total 15 s.h.

Socio-humanistic elective courses must be selected to satisfy College of Engineering policy.

Graduate Program

Graduate programs leading to the Master of Science degree, both with and without thesis, and to the Doctor of Philosophy degree 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 program, in keeping with the belief that the student's program can best be developed individually within the framework of 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 adviser and through a review by the examining committee. As soon as possible after admission, each student should select a program faculty member who by mutual agreement will serve as major adviser to the student. The major adviser will assist the student in planning all aspects of his or her graduate program and usually will serve also as the research adviser.

The Program of Mechanical Engineering cooperates in interdisciplinary doctoral programs.

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 advisers.

Doctor of Philosophy

The Doctor of Philosophy degree is granted primarily on the basis of achievement rather than on the accumulation of semester hours of credit. However, the candidate is normally expected to have completed three academic years of residence, or two years if he or she does not hold 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 need; others are the result of appointments.

Admission

Minimum requirements for admission to a graduate program in mechanical engineering are the same as for the Graduate College.

Although graduate students in mechanical engineering will occasionally be the bachelor's 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.

Mechanics and Hydraulics

Program chairman: Kwan Rue


Ph.D. program: The Program is Mechanics and Hydraulics offers graduate curricula preparing students for professional careers and further study in fluid mechanics, solid mechanics, hydraulic engineering, bio- mechanics and water resources and flow instrumentation. The Program is strongly committed to the development of each interdisciplinary area of great need and promise as biomechanics, ornithological and water reclamation. The Program also cooperates in the interdisciplinary Program in Applied Mathematical Sciences (see "Graduate College"). The Program 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 Program 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 solid program makes use of good laboratory facilities available in the colleges of Engineering and Medicine.

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 25 semester hours are devoted to the dissertation and 15 or more semester hours to mathematics or other closely related areas, leaving approximately 20 semester hours of major courses to be taken in the Program. Choice of major subject 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 its cultural value. Ability to pass the examinations for the first year of a language is accepted in lieu of actual registration. Foreign-language instruction is offered for students from countries 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 supervision is appointed for each graduate student, with consideration given to the student's wishes. Under Graduate College rules, the comprehensive examination must be taken by the
Financial Aid
There is a considerable amount of support available for graduate students. A significant volume of research work relies on enlisting a large number of graduate students as research assistants.

Admission Requirements
Each curriculum in the 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 have graduated in the upper quarter of his or her undergraduate class and to have a grade-point average above 2.5; usually 3.0 is expected. Ph.D. candidates should have at least a 3.5 grade-point average in their master's degree work. Applicants must meet the general admission requirements of the Graduate College (see "Graduate College").

Division of Energy Engineering
Chairman: John F. Kroms
Associate Chairman: Virgina C. Paul

The responsibilities of the Division of Energy Engineering include the development and teaching of courses at all levels, development and maintenance of teaching and research laboratories and conduct of basic and applied research in the disciplines of fluid, thermal, and environmental sciences. The Division's mission is to provide excellence in its teaching and scholarly activities, while remaining responsive to the changing engineering needs of society and its demands for the engineering profession.

The applications of the fundamental principles of biological, chemical, fluid, and thermal sciences to the design of engineering components and projects, to the production, distribution and utilization of water, energy, and materials, to the protection of the environment and to the ever increasing interaction between engineering and health sciences are conveyed to the undergraduate students through a series of integrated courses at various levels. In addition, all graduate students in all engineering curricula through the core program, the Division offers specialized courses for students majoring in: biological, chemical, civil and mechanical engineering, and campus-wide general courses highlighting the complex interaction between engineering and other fields of learning in dealing with the problems of energy and environment.

At the graduate level, the Division offers courses in thermal sciences and transport phenomena, environmental sciences, fluid mechanics, hydraulic engineering and water resources for students pursuing advanced degrees in the Civil Engineering, Environmental Engineering, Mechanical Engineering, and Fluid Mechanics Programs. The diversity of the teaching and research interests of the faculty of the Division and the opportunities available to graduate students pursuing M.S. and Ph.D. theses research under their direction are best illustrated by listing the currently active research projects.

Active Research Projects
Fluid Mechanics: Dispersan and diffusion of passive and reactive contaminants in rivers and lakes; experimental and theoretical studies of turbulent boundary layers, wakes, jets and plumes; analytical and numerical solutions of problems in ship hydrodynamics; physiological flow phenomena in cardiovascular and intestinal systems; wind loads on structures; detection and removal of airborne particles.

Hydraulic Engineering: Design, modeling and on-site testing of intake and outfall structures; thermal discharges into natural water bodies; cooling tower performance; sediment transport; formation of ice covers and ice jams; snow drifts, ice forces on structures.

Instrumentation: Laser and hot-wire anemometry; measurement of sediment and very-low fluid velocities; real-time acquisition and processing of fluid motion data.

Thermal Sciences: Biological heat transfer and human comfort; dynamics of aerosol cloud suspensions; radiant heat transfer through real gases; enzephalic heating; plasma non-equilibrium; remote heat-flux measurements; applications of power plant waste heat; analysis of power plant cooling systems; economics of power production; design and use of solar energy collectors.

Water Quality: Mathematical modeling of water quality in streams and lakes; optimal allocation of resources to control water pollution; removal of trace organics in water treatment; kinetics of nitrification in streams; sludge stabilization in wastewater treatment; disposal of sludge from water and wastewater treatment; effect of nitrogen load variations on nitrification with the rotating bio-disc; scrubbing of hydrogen sulfide from anaerobic digester gases with ferric chloride solutions.

Water Resources: Economics of water usage; management of reservoirs; stochastic hydrology, systems analysis; watershed modeling; water utilization by waste heat management.

Special Facilities
The laboratory for undergraduate instruction in fluid and thermal sciences is located in the Engineering Building and contains a small wind tunnel, a water table, various air, water and oil flow devices, and numerous small-scale experiments which demonstrate the principles of mass, momentum and energy transfer. More specialized experiments are also performed in the other laboratories of the Division and with the facilities of the Iowa Institute of Hydraulic Research. Experiments in the environmental sciences are performed at the laboratories in the University Van Weel Plant and the P. P. Morgan Sanitary Engineering Laboratory.

The research facilities available to the Division's faculty and their graduate students are broadly divided into three categories. Since most members of the senior research staff of the Institute of Hydraulic Research hold co-appointments in the Division of Energy Engineering, the teaching and research activities of the Division are closely connected with the research and consulting activities of the Institute. This is particularly so in the areas of fluid mechanics, hydraulic engineering, flow instrumentation and related resources and research facilities that are available to the authors associated with the Division of Energy Engineering. In fact, the living room of the author's house is the most modern research facility in the world. The equipment includes a 330 foot sowing tank, several
hydraulic fluids and wind tunnels, a dispersion flume, a wave tank and a special low-temperature flow facility for investigation of ice phenomena. A new building constructed recently on the east bank of the Iowa River hosts a unique environmental flow facility: a water flume that measures 7.6 ft. high, 10 ft. wide, and 66 ft. long, and operates with speeds up to 3 fps. The recent completion of this facility has added a new dimension to the laboratory simulation of environmental dispersion and diffusion problems in water as well as in the atmosphere. The Institute is also equipped with an IBM 1800 data acquisition and control system for on-line recording, storage and processing of experimental data gathered at various points in the laboratory.

Research in environmental sciences and engineering is conducted in the Division’s laboratories located at the Philip F. Mangone Sanitary Engineering Research Laboratory, situated on the site of the Iowa City Municipal Waste-water Treatment Plant and in the Water Plant Laboratory, located in the University West Treatmet Plant. The Morgan Laboratory is devoted to research activities in the wastewater treatment area. It includes a modern wet chemistry laboratory and space for bench and pilot scale studies of the physical, chemical and biological operations and processes of wastewater treatment. Permanent pilot facilities at the Morgan Laboratory include a 10,000 gallon aerated tank, a gallon-per-minute activated sludge treatment system, and a gallon-per-minute rotating biological disc unit. The Water Plant Laboratory is the center of research in the water treatment and natural aquatic systems area. The laboratory is fully equipped for both routine and advanced chemical and biological analyses of water and provides space for both bench and pilot scale studies. The entire 4,000,000 gallon per day water facility is especially designed to enable the isolation of treatment operations for special study without undue interference with the production and supply of treated water to the University. The Iowa River, which flows through the University Campus, and the Coralville Reservoir, located approximately 5 miles upstream, serve as “natural laboratories” for water quality and limnological research.

The Division of Energy Engineering, located in the Engineering Building and include a bidirectional reflectance facility for radiation property measurements, a solar energy research laboratory, an interferometric holography laboratory, a wall-stabilized RF plasma facility with spectroscopic diagnostic equipment, and a desalination facility. A facility for the separation of combustible materials from solid waste is presently under construction.

Financial Aid
Since the Division’s faculty is engaged in a wide variety of sponsored research projects, a majority of the 75 graduate students working with the professors in the Division receive research assistantships. Of these, the Institute of Hydraulic Research employs some 30 to 35 graduate students half-time to work on projects in the fields of structural engineering, water quality, and water resources. The Division of Energy Engineering offers similar assistantships for graduate participation in research projects in the thermal and environmental sciences. A limited number of fellowships and teaching assistantships are also available from the Division. In all cases, the appointments are made on the basis of scholastic achievement and research interest. The Division of Energy Engineering also encourages undergraduate involvement in its research through the University Work Study Program and the Undergraduate Research Participation Program.

In order to be considered for financial aid, the prospective student should complete the Graduate Awards Application Form and forward it to the Chairman of the appropriate academic program.

Courses

Core Engineering Program Courses

Electrical Thermodynamics I

4 s.h.

Basic principles of classical thermodynamics, including first and second laws, reversibility, irreversibility, Carnot Cycle, properties of pure substances, closed single systems and non-dimensional groupings for open systems, engineering applications.

Chemistry 362 and Chemistry 461.

Geology 290: Mechanics of Fluids and Transient Processes

4 s.h.

Love, ground flow and transient processes; soil grain flow; boundary and initial boundary conditions: heat and mass transfer in fluids; measurement of flow properties. The course includes scheduled laboratory experiments.


Special Program Courses

Environmental Engineering

4 s.h.

Technique of physical measurement, standards, calibration, estimation of error; static and dynamic performance of measuring systems, laboratory experiments; planning experiments. Some CSE 202.

Petroleum: junior standing in engineering.

Biological Engineering

5 s.h.

Elements of basic biology; scope and applications in problems in engineering.

Petroleum: Zoology 275.

Mechanical Engineering Design I

3 s.h.

Primary effort devoted to completion of a substantial design project. Continuation of MSE 202. Some CSE 204.


General Courses

280/196: Introduction to Contemporary Societies

3 s.h.

Technical, legal, economic and behavioral aspects of energy production, delivery and use, explored in cross-disciplinary implications of energy systems. Some CSE 40.

Petroleum: junior, senior, graduate or advanced standing in the University.

297/198: Technology of Environmental Pollution Control

3 s.h.

Application of scientific and engineering principles to control of the release of pollutants to the air, water and land environment; water pollution and its control, and waste water management, including resource recovery. Petroleum: senior standing in the University.

297/103: Environmental Health

3 s.h.

Major problems in environmental health control, governmental regulations of food and drug, air, water pollution, disease control, injury, sanitation, communicable diseases, etc. Petroleum: senior standing in the University.

298/114: Environmental Materials and Construction

3 s.h.

Planning for and the assessment of the environmental impacts of man-made systems, including transportation, water resources, power generation, housing and other facilities. Petroleum: graduate standing in the University.

298/117: Advanced Environmental Management

3 s.h.

Development of alternatives for environmental protection and integration; solutions of algebraic and differential equations with emphasis on digital computers; initial and boundary value problems. Some CSE 201-111. Petroleum: Mathematics 224, 225, 309, 401-112.

298/127: Environmental Analysis

2 s.h.

Petroleum: junior standing in environmental science or environmental engineering.

Some CSE 201-111.

298/133: Advanced Environmental Management

2 s.h.

Petroleum: mathematics and environmental science or environmental engineering.

Some CSE 201-111.
and structures; agricultural drainage; planning of irrigation and drainage systems. Preparatory: 3 hrs.

250-192 River Control & Water Power Engineering 3 hrs.
Survey of several topics including planning and essentials of water resource projects: river morphology, reservoirs; flood control works; river navigation works; hydraulic machines; 19th-century power generation. Preparatory: 230-120.

250-193 Mechanics of Buildings Transportation 3 hrs.

250-194 Hydraulic Design 3 hrs.
Catastrophic tides and their effect on hydraulic structures; selection of type of dams, hydraulic design of spillways, energy dissipators, gates, outlet works, intakes and other water conveyance structures; municipal and industrial useful structures. Preparatory: 320-180, 320-181.

250-195 Applied Hydrodynamics 3 hrs.

250-196 Hydrology 3-4 hrs.
Observations and distribution of water by natural processes; climatological and hydrological characteristics of water; observation and interpretation of meteorological and rainfall characteristics; storage problems. Preparatory: 320-150.

250-198 Water Resources Systems 3 hrs.
Application of probability and statistical theory, operations research, and computer to the planning, design, and operation of water projects; multiple-objective analysis, sequential optimization, human factors and environmental objectives, real-time analysis, and modeling techniques as applied to water resources. Preparatory: 320-180.

250-200 Coastal Hydrodynamics 3 hrs.

250-251 Hydraulic Analysis of Unsteady Flow 3 hrs.
Unsteady motion of fluid confined to solid boundaries; momenta effects; compressibility effects; stability of oscillations in complex systems; system motion with linear surface. Preparatory: 250-160.

250-255 Blackwell Hydrodynamics 3 hrs.
Basic concepts and analysis of hydrodynamic processes; stress-correlation and spectral analysis, wave analysis, applications by case; analysis of internal hydrodynamic processes. Preparatory: 230-130, 230-153 and 250-160, or equivalent.

250-256 Advanced Water Resources Development 3 hrs.
In-depth examination on societal, economic, legal, engineering, environmental, human factors, and other aspects of water resource development and water resource research. Preparatory: consent of instructor.

Seminars, Advanced Topics and Research

250-281 Advanced Topics 3-6 hrs.
Topics in the professional aspects of mechanical engineering. Specified, field study, clinic, laboratory, seminar-discussions used to present advanced topics. Each mechanical engineering undergraduate is required to complete four courses of 250-281.

257-056 Individual Investigations 3 hrs.
Laboratory investigations, computer studies, tracer surveys, design studies are suitable independent projects for undergraduates. Arranged between student and faculty advisor. No more than 5 credit hours may be taken for degree program. Preparatory: consent of faculty advisor.

257-125 Projects in Energy Engineering 3 hrs.
For graduate students with engineering majors who desire credit in undergraduate engineering courses. May be repeated. Preparatory: consent of instructor.

257-151 Mechanical and Hydraulics Seminar 3 hrs.
Recent topics in mechanical and hydraulics are presented and discussed by students, faculty and guest lecturers. Preparatory: graduate standing.

257-156 Environmental Engineering Seminar 3 hrs.
Discussion of research and practical problems in environmental science and engineering or the methodology, faculty and guest lecturers. Preparatory: senior or graduate standing.

257-157 Mechanical Engineering Seminar 1-3 hrs.
Recent topics in mechanical engineering are presented and discussed by students, faculty and guest lecturers. Preparatory: senior or graduate standing.

267-106 Contemporary Topics in Energy Engineering 3 hrs.
New topics in fluid, thermal and environmental energy as not covered elsewhere as presented from time to time. Topic and coverage in the course determined by student and faculty interest. Preparatory: consent of instructor.

257-109 Individual Investigations 3 hrs.
In laboratory, engineering, or research projects, literature surveys and design-engineering are suitable projects for independent study. Project arranged between student and faculty advisor. Preparatory: graduate standing and consent of faculty advisor.

For fulfillment of the theses of the M.S. students in the Department of Mechanical Engineering.

257-120 Advanced Topics in Environmental Sciences 3 hrs.
Special studies and projects on advanced environmental topics of theoretical and practical significance in environmental science and engineering. May be repeated for credit. Preparatory: consent of instructor.

257-120 Research: Thesis in Environmental Sciences 3 hrs.
Advanced treatment of topics in thermodynamics, energy processes, mechanisms, heat and mass transfer, and related experimental and analytical techniques. Selection of topics and content will be determined by instructor and student interest. Preparatory: consent of instructor.

257-127 Advanced Topics in Fluid & Hydraulic Engineering 3 hrs.
An in-depth study of topics in fluid mechanics, hydraulics, water resources, mass and momentum transport, and related experimental and analytical techniques. Selection of topics and content will be determined by instructor and student interest. Preparatory: consent of instructor.

For fulfillment of Ph.D. degree requirement. Preparatory: consent of faculty advisor.

Division of Information Engineering

Chairman: Robert C. Arntzen

Professor: Philip J. C. Bellan, Roger D. Chen, Mark J. Dryan, John P. Etienne, Louis W. Filiberto, Lawrence A. Flowers, senior professor Bruce D. Gunter, Donald M. Lepel, Yen K. Le, Norbert R. Matik, Stephen M. Shoichet professor Rodney J. Smith

The Division of Information Engineering coordinates laboratories in the Electrical Engineering Program with the Core Engineering Dynamic Systems Analysis courses and the Electromagnetic Theory course. The Division assumes responsibility for teaching the core courses as well as all the courses in the Electrical Engineering Program.

Research is encouraged in the appropriate programs as well as interdisciplinary areas of current interest. Investigations are the type permitting interaction with the various disciplines in the University such that the involved faculty are pushing the outer edge of knowledge. Due to the nature and diversity of the faculty, many types of projects have either been completed or are on going in areas of computer, synthesis, speech, music, computerized heart monitoring, communication theory, control theory, digital systems, microprocessors, digital control, satellite tracking, information security, error correcting, electronics, thin film developments, plasma physics, energy development, linear and nonlinear system theory, computer science, physics, mathematics, and filtering and estimation theory, to name a few.

Close cooperation with colleagues in statistics, computer science, mechanical, medical, physics, and sociology permit the faculty and graduate students to expand the tools of engineering to other areas of knowledge.

Special Facilities

The Division is housed in a new wing of the Engineering Building. Modern well-equipped laboratories are available for research and instruction in control systems, communication systems, digital systems, electromagnetic theory, microcomputer techniques, physical electronics devices, plasmas, special projects, and thin film techniques. A computer laboratory is provided for undergraduate and graduate student use for study and research in analog, digital, and hybrid

Division of Information Engineering
computation and simulation. In addition several microprocessors and their associated peripheral devices are available.

Financial Aids
A number of fellowships, traineeships, assistantships, scholarships and industrial grants are available to graduate students who qualify. These are awarded on a competitive basis.

Courses
Core Engineering Program Courses

540.011 Dynamic Systems Analysis I 3 a.h.
Analysis of dynamic behavior of physical systems; use of mathematical methods to aid in understanding system response; correct treatment of electrical, mechanical, fluid and thermal systems. Laboratory included. Prerequisites: Mathematics 236.24.

540.012 Dynamic Systems Analysis II 3 a.h.
Continuous and discrete-time systems; theory of sample spaces; development of general techniques applicable to all types of physical systems; laboratory included. Prerequisites: 540.011. Mathematics 236.24.

540.014 Dynamic Systems Analysis for Transfer Students 1 a.h.
One-semester treatment of essential concepts (450.011 and 540.012) for transfer students taking one year of credit in another physics laboratory included. Prerequisites: Mathematics 234.24.

540.025 Electromagnetic Theory 4 a.h.
Electric and magnetic fields. Maxwell's equations and wave propagation; applications including light, guided waves, circuit theory and electromagnetic energy propagation. Prerequisites: 224.37 and 540.011.

Special Program Courses

540.080 Principles of Electrical Engineering Design I 3 a.h.
The course consists of several design problems using basic electrical devices and equipment. Emphasis is on the application of discrete devices; e.g., clades, monostables, flip-flops, etc. Prerequisites: 540.013 or 540.014.

540.081 Principles of Electrical Engineering Design II 3 a.h.
The course consists of several design problems in electrical engineering, with emphasis on small scale and medium scale integrated circuits and advanced amplifiers. Prerequisites: 541.080, 541.081.

540.082 Principles of Electrical Engineering Design III 3 a.h.
Design, development, and utilization of contemporary electronic instrumentation for measuring biomedical variables of clinical and research interest. Students may choose one or more elective courses. Clinic is the course instructor for specific modules available. Prerequisites: 540.092 or 29.20 or 29.18.

541.188 Biomedical Systems Analysis 3 a.h.
Application of principles of control theory to analysis of biomedical systems, development of computer simulation techniques to study dynamic response of physiological systems. Prerequisites: 224.36 or 243.16. 29.20 or 29.18 or 294.10.

541.189 Biomedical Measurements 3 a.h.
Design, development, and utilization of contemporary electronic instrumentation for measuring biomedical variables of clinical and research interest. Students may choose one or more elective courses. Clinic is the course instructor for specific modules available. Prerequisites: 540.092 or 29.20 or 29.18.

Digital Systems

540.090 Fundamentals and Digital Systems 3 a.h.
Logic of switching circuits; analysis and synthesis of combinational and sequential circuits; introduction to digital computers, organization and operation, computer architecture, and devices; lab arranged. Prerequisite: 540.004.

540.101 Switching Theory 3 a.h.
Combinational and sequential logic networks; cellular logic arrays; hazards and faults; fault testing and diagnosis, design techniques to facilitate testing, reliable logic networks; automated design. Prerequisite: 540.020.

540.128 Computer Organization 3 a.h.
Microprocessors; real computers, microprocessors including memories, arrays, control modules, I/O systems, computer organization; computer architecture; arithmetic, and computer architecture; computer interfaces for real-time applications. Prerequisites: 540.124.

540.146 Computer Communications 3 a.h.
Communications systems components, digital communication systems; coded signals, codes with error control, modems, digital error detection, multiplexing, multiplexing, digital communication systems; noise detection, error detection, communication errors, communication networks. Prerequisites: 540.137. 540.138.

540.157 Small Computer Systems 1 a.h.
Introduction to micro- and minicomputers; machine language, assembly language, programming for on-line and real-time systems, special purpose small computers. Prerequisites: 540.137 or 540.138.

540.158 Microcomputer Applications 3 a.h.
Design of small computer based systems; micro-computers, micro-processors and support chips, interfaces, micro-computer and computer control systems, special projects. Prerequisites: 540.135. 540.136.

540.159 Advanced Switching Theory 3 a.h.
Large scale completeness, module logic design, asynchronous sequential circuits, synchronous sequential circuits, faults, fault diagnosis, logic design for latch circuits, fault-tolerant systems. Topics from current literature. Prerequisites: 540.130.

Electronics

540.040 Electronics Circuits I 5 a.h.
Physics of solid state electronic devices; pn junction diodes, field effect transistors, bipolar transistors, vacuum tubes, and planarized linear circuit models; basic amplifiers and feedback networks. Prerequisites: 540.012.

540.041 Electronics Circuits II 5 a.h.
Active circuit design based on device theory from 541.040; amplifier design, basic feedback and nonlinearity theory, high-frequency applications of solid state devices, electronic computer system design theory. Prerequisites: 540.040.

540.148 Linear Integrated Circuits 3 a.h.
Sub-systems, biasing, biasing, modeling, modes of operation and characteristics of operational amplifiers, differential amplifiers and other IC devices. General design techniques for integrated devices. Prerequisites: 540.041.

540.149 Electronics for Applications 3 a.h.
A linear-amplifier circuit employing functional operation of linear and digital integrated circuits, and practical applications of these to industrial and laboratory ICs in instrumentation and signal processing applications. Prerequisites: 540.012.

540.154 Digital Electronics 3 a.h.
Large scale operation of integrated circuits; computers of logic families, large scale data systems, computer architecture, computer operating systems, MSI and LSIs. Prerequisites: 540.012.

540.155 Digital Signal Processing 3 a.h.

Communications

540.080 Analog Information Systems 3 a.h.
Introduction to signal representation; processing with linear systems and filters, amplitude, phase, and phase-amplitude; performance in the presence of noise; digital communication. Prerequisite: 224.38 or 243.16.

540.081 Statistical Communication Theory 3 a.h.
Determination and random signals, correlation functions and power spectral densities; modulation theory, sampling and quantization, multiplexing, signal-to-noise ratio and noise measurements; information theory and coding. Prerequisites: 540.029.

540.183 Advanced Communication Theory 3 a.h.
Unified approach to principles underlying analog and digital communication systems, network synthesis, filtering, optimum receiver principles, efficient signaling for message sequences. Prerequisites: 540.180.

540.182 Information Theory 3 a.h.
Quantitative measures of information; discrete and continuous sources; source encoding and decoding; channel capacity and channel coding, channel encoding and decoding. Prerequisites: 540.180.

540.184 Coding Theory 3 a.h.
Use of coding techniques to improve reliability and security of communication and compression of data, error-correcting, error-detecting and cyclic codes, block and sequential decoders, concatenated codes, arithmetic codes. Prerequisites: 540.134 or 540.135.
Chemical Engineering Laboratory
Located in the Chemistry-Botany Building, this laboratory includes pilot plants equipped for the study of industrial evaporation, distillation, drying, fluid flow, and heat transfer. In addition there are a subcritical nuclear reactor and facilities for bio-engineering research and investigation of plastics and other materials. Laboratories for individual research by graduate students are equipped with chromatographs, analog computers and other instruments. A small shop is available for students to use under the supervision of a technician.

Electron Microscope Laboratory
This instructional and research facility is equipped with a RAC EMU-3F Electron Transmission Microscope and the necessary specimen preparation equipment to permit examination of specimens by the use of thin foil and replica microscopy and selected area diffraction. This facility complements the adjacent facility involving the mechanical behavior of materials. Such phenomena as the following may be studied by use of this tool: the behavior and distribution of dislocations as a result of plastic deformation, stacking fault energy, subgrain boundaries, radiation damage. Electron fractography and the study of surfaces may be done by use of the replica technique, and phase transformation may be studied by use of selected area diffraction.

Materials Processing Laboratory
These laboratories consist of the Metal Casting and Welding Laboratory, Metal Cutting Laboratory, and the Heat Treatment and Metallurgical Laboratory. They are equipped to conduct laboratory instruction and research involving primarily the liquid and solid state of metallic materials. They are equipped with such items as melting and heat treating furnaces, a variety of welding equipment, foundry sand testing and melting equipment, pyrometers, non-destructive testing machines, metal forming equipment, metallurgical specimens mounting presses and polishers, a variety of metallographic microscopes, and a darkroom.

Materials Testing Laboratory
This laboratory is equipped for the determination of physical and mechanical properties of materials of engineering interest such as metals, polymers, and biomaterials. It includes a compression testing machine, an axial testing machine and a universal testing machine with mechanical and sophisticated multichannel electronic instrumentation for measuring deformation and stress. It also includes a NVTs machine suitable for the investigation of fatigue properties of metals. An additional facility in the form of a random function generator for the study of fracture is being added.

In addition to the usual facilities a modern computer testing capability with a thermally controlled chamber for conduction of experiments at high temperatures. Pulse generator equipment has been acquired more recently for the dynamic response of metals in the high frequency range.

Mechanical Engineering Laboratories
The mechanical engineering laboratories are equipped and instrumented to provide students with educational experience in a wide variety of fields using modern methods of measurement and analysis including computers, a variety of strain gages, photoelastic laboratory and other conventional instrumentation. Particular area include study of material behavior with emphasis on the mechanics of dynamic systems and mechanisms of failure under both static and cyclic loading.

Powders and Particulates Laboratory
A modesty equipped powders laboratory is available containing sampling devices, devices for characterizing bulk properties of powders; various mixers, grinders, sieving equipment; optical microscopes; sieving furnaces; mounting and polishing equipment. In addition there is access to a scanning electron microscope Quantimetron 720 system, a computer center and specialized engineering and chemistry library facilities and laboratories.

Structural Testing Laboratory
This laboratory is equipped for the determination of physical properties of materials in engineering construction, such as soils, aggregates, concrete, metals, timber and plastics. Included are a compression testing machine, a universal testing machine and an axial testing machine, along with mechanical and electronic instrumentation for the accurate measurement of deformations under load. The structural laboratory also contains a pressroom housing a press and frame which permits construction of prestressed concrete structural members. A soils laboratory contains equipment for consolidation and triaxial testing equipment of the latest design.

Divisional Financial Aid
5-scholarships are available for graduate students from several societies including the American Society of Civil Engineers, the American Society of Mechanical Engineers, the American Society of Chemical Engineers, and the American Society of Naval Engineers. The scholarships are available to students who have completed at least one year of study in an engineering field and who are enrolled in a full-time undergraduate program in engineering. The scholarships are open to all students, regardless of their level of academic achievement. The scholarship recipient must maintain a minimum grade point average of 3.0 on a 4.0 scale.

Courses

Core Engineering Program Courses

580/577 Statics

580/578 Dynamics

580/579 Strength of Materials

580/579 Mechanics of Solids

580/579 Mechanics of Deformable Solids

580/579 Mechanics of Deformable Solids

580/579 Mechanics of Deformable Solids

580/579 Mechanics of Deformable Solids

580/579 Mechanics of Deformable Solids
Computation Applications in Structural Design 3 h.

Prepared Concrete 3 h.
Analysis of reinforced concrete elements and integration with materials science; design; properties; behavior of materials and structures; finite element methods; applications in the civil and structural engineering. Prerequisites: 550.125.

Foundations of Structures 3 h.
Applications of soil mechanics in foundations of buildings, bearing capacity and settlement analysis; capacity of earth slopes; pressure on retaining walls; properties of soils. Prerequisites: 550.125.

Advanced Theory of Structures 3 h.
Methods of analysis of composite structures. Prerequisites: 550.125.

Chemical and Transport Processes 3 h.
Applications of thermodynamic and physical principles to chemical and transport processes. Properties 550.125.

Process Calculations 3 h.

Flow and Momentum Transfer 4 h.
Applications of fluid mechanics and transport phenomena to the design of chemical process equipment. Properties 550.130, 550.135.

Phase Transitions 3 h.
A study of the concepts and principles of chemical reactions. Topics include reaction kinetics, solution equilibria, catalysis, and stereochemistry. Properties 550.130.

Chemical Reaction Kinetics 2-3 h.
Applications of chemical reactions to design chemical processes. Properties 550.130.

Economic Design 3 h.

Laboratory Investigations of Transport Processes 4 h.
Laboratory investigations of reactive transport processes and chemical behavior of materials. Prerequisites: 550.100, 550.105.

Unit Operations Lab 2 h.

Chemical Engineering Processes 3 h.
Division of Systems Engineering

compact access and the development of computerized systems for county equipment cost records, legislative districting and a transit systems evaluation package.

Facilities

The Division of Systems Engineering is responsible for development and supervision of the Engineering College's Computer Based Education (CBE) Laboratory. This laboratory provides on-line interaction with the University's IBM 360/65 and HP-2000 computer systems via video display and hard copy terminals. The laboratory also contains another computer system of equivalent equipment such as keypunches and line printers, as well as video equipment for instructional purposes.

The Division occupies newly remodeled fourth floor space of the Engineering Building. Spacious teaching laboratories and graduate student offices are provided.

Financial Aids

The Division of Systems Engineering offers a number of quarter-time and half-time graduate research assistantships through grants and contract funds available to faculty of the division. Stipends currently range from $1950 to $4500 for the academic year. Selection is based on academic competence and the research needs of the Division. Research support is also available through Graduate College funds and allied research programs such as the Institute of Urban and Regional Research. Advanced graduate students may also qualify for higher stipend instructor positions.

Courses

Core Engineering Program Courses

588/591 Introduction to Engineering: Design I 3 a.h.
Survey of various branches of engineering; the engineering approach to problem solving; engineering design projects requiring creativity, analysis, and synthesis; and use of computer-aided design

588/592 Introduction to Engineering: Design II 3 a.h.
Team approach to solutions of a semester long design project selected by the student; modeling, simulation, economics, pressure, and human factors

588/593 Introduction to Engineering: Graphics 3 a.h.
Basic graphics concepts necessary in contemporary engineering, including computer-aided drafting, and traditional drawing techniques

588/594 Introduction to Engineering: Computation 3 a.h.
Digital computer programming utilizing FORTRAN and other high-level BASIC; engineering applications of logic circuits, decision making, algorithms, subroutines, and data processing

588/595 Introduction to Engineering: Economics 3 a.h.
Emphasis on three-month project involving the identification, modeling and analysis of design problems using optimization principles, methodology and computer-aided design

588/597 Management Engineering Balance 3 a.h.
Course covers management science methods and the role of engineering systems in the overall engineering education. Students are expected to complete a large project related to the management of a systems engineering project, including system planning, scheduling, evaluation of engineering design, and implementation of the final system.

Probability and Statistics for Engineering and Physical Sciences 3 a.h.
Probability concepts, probability models, random variables, functions of random variables, estimation, decision theory, hypothesis testing, regression. Prerequisite: 220D/2.0 or equivalent. Same as 229A. Fall, Spring.

General Courses

587/597 Communication in Industry I 3-4 a.h.
Introduction to communication methods within groups of people, from workers to large organizations, and in principles involved in effectively communicating information among and within groups. Each student and group prepares a small project, and receives feedback during review meetings. Prerequisites: 597/4.0 or equivalent. Fall, Spring.

587/598 Communication in Industry II 3-4 a.h.
Course is designed to provide an in-depth understanding of the process of communication within organizations and to develop effective communication skills. Each student prepares a small project, and receives feedback during review meetings. Prerequisites: 597/4.0 or equivalent. Fall, Spring.

587/599 Technical Writing for Non-Engineers 3 a.h.
Basic grammar concepts applied in areas of art, music, literature, design, geography, etc., to which technical representations become the primary means of communication. May include: orthographic projections, geometric constructions, logical and diagrammatic models, perspective, shades and shadows, graphic and topographic drawing.

588/591 Communicating Technical Information 3 a.h.
Discussion and application of principles of interpersonal communications, and review of the structure and idiom of the English language; consideration of media and forms appropriate for reporting technical information; practice in speaking and in writing articles, reports, thesis and defenses.

Design and Engineering Management Courses

588/591 Principles of Design I 3 a.h.
Emphasis on three-month project involving the identification, modeling and analysis of design problems using optimization principles, methodology and computer-aided design. Prerequisite: Junior standing. Fall, Spring.

588/592 Principles of Design II 3 a.h.
Emphasis on three-month project involving the use of digital simulation and probability and statistics in design. Prerequisite: 591/4.0. Fall, Spring.

588/597 Engineering Management Science 3 a.h.
Course provides a survey of the control functions of management science for the engineer. Emphasis is on the use of computer-aided design and scheduling techniques in the evaluation of engineering systems.

588/595 Design II 3 a.h.
Emphasis on three-month project involving the use of digital simulation and probability and statistics in design. Prerequisite: 591/4.0. Fall, Spring.

588/597 Engineering Management Balance 3 a.h.
Course covers management science methods and the role of engineering systems in the overall engineering education. Students are expected to complete a large project related to the management of a systems engineering project, including system planning, scheduling, evaluation of engineering design, and implementation of the final system.

588/595 Probability and Statistics for Engineering and Physical Sciences 3 a.h.
Probability concepts, probability models, random variables, functions of random variables, estimation, decision theory, hypothesis testing, regression. Prerequisite: 220D/2.0 or equivalent. Same as 229A. Fall, Spring.

588/597 Communication in Industry I 3-4 a.h.
Introduction to communication methods within groups of people, from workers to large organizations, and in principles involved in effectively communicating information among and within groups. Each student and group prepares a small project, and receives feedback during review meetings. Prerequisites: 597/4.0 or equivalent. Fall, Spring.

588/598 Communication in Industry II 3-4 a.h.
Course is designed to provide an in-depth understanding of the process of communication within organizations and to develop effective communication skills. Each student prepares a small project, and receives feedback during review meetings. Prerequisites: 597/4.0 or equivalent. Fall, Spring.

588/599 Technical Writing for Non-Engineers 3 a.h.
Basic grammar concepts applied in areas of art, music, literature, design, geography, etc., to which technical representations become the primary means of communication. May include: orthographic projections, geometric constructions, logical and diagrammatic models, perspective, shades and shadows, graphic and topographic drawing.

588/591 Communicating Technical Information 3 a.h.
Discussion and application of principles of interpersonal communications, and review of the structure and idiom of the English language; consideration of media and forms appropriate for reporting technical information; practice in speaking and in writing articles, reports, thesis and defenses.

Design and Engineering Management Courses

588/591 Principles of Design I 3 a.h.
Emphasis on three-month project involving the identification, modeling and analysis of design problems using optimization principles, methodology and computer-aided design. Prerequisite: Junior standing. Fall, Spring.

588/592 Principles of Design II 3 a.h.
Emphasis on three-month project involving the use of digital simulation and probability and statistics in design. Prerequisite: 591/4.0. Fall, Spring.

588/597 Engineering Management Science 3 a.h.
Course provides a survey of the control functions of management science for the engineer. Emphasis is on the use of computer-aided design and scheduling techniques in the evaluation of engineering systems.

588/595 Design II 3 a.h.
Emphasis on three-month project involving the use of digital simulation and probability and statistics in design. Prerequisite: 591/4.0. Fall, Spring.

588/597 Engineering Management Balance 3 a.h.
Course covers management science methods and the role of engineering systems in the overall engineering education. Students are expected to complete a large project related to the management of a systems engineering project, including system planning, scheduling, evaluation of engineering design, and implementation of the final system.

588/595 Probability and Statistics for Engineering and Physical Sciences 3 a.h.
Probability concepts, probability models, random variables, functions of random variables, estimation, decision theory, hypothesis testing, regression. Prerequisite: 220D/2.0 or equivalent. Same as 229A. Fall, Spring.
Operations Research Courses

588/540 Quantitative Methods 3 a.h.
Topics from discrete mathematics leading to useful models in operations research; elements of linear algebra and matrix theory, finite differences and difference equations, and matrix theory and elementary numerical methods. Prerequisites: 223:38. Fall.

588/541 Introduction to Operations Research 3 a.h.
Topics and algorithms from operations research including linear, nonlinear, and dynamic programming, and inventory theory. Prerequisite: Computer Science 110 or equivalent. Full, Spring.

588/542 Production Inventory Models 3 a.h.
Study of mathematical models in operations research methodology, and computer-based systems for production planning, controlling inventory levels and forecasting product demand. Prerequisites: 588/541 and 223:39 or equivalent. Fall.

588/543 Quantitative Investment Analysis 3 a.h.
Investment criteria, cost benefit and break-even analysis, replacement and capacity expansion, decision making, capital budgeting, concepts of risk and applications. Prerequisites: 588/541 and 223:39 or equivalent. Fall.

588/544 Planning and Organizing 3 a.h.
Nature and design of computer-based management information systems; concepts of computer hardware, software, communication networks, and file structures; methods used in system design; case studies; managing the system. Prerequisite: Programming experience. Fall.

588/547 Sequencing and Scheduling 3 a.h.
Sequencing and scheduling in machine shops, computer systems, construction, and other D. and complex systems. Rules for optimal and suboptimal scheduling; simulation models for large systems. Prerequisite: 588/543 or equivalent. Spring.

588/549 Systems Simulation I 3 a.h.
Simulation of operating characteristics of complex systems using modern digital computer. Prerequisites: FORTRAN or equivalent; 588/543 and 588/547. Fall.

588/543 Mathematical Programming 3 a.h.
Study of mathematical models, theory, and algorithms for linear and nonlinear optimization; emphasis on linear optimization including variational techniques of the simplex method, post-optimality analysis, integer programming, transportation and network problems, and duality theory. Prerequisite: 588/541 or equivalent; knowledge of matrix algebra. Full.

588/545 Mathematical Programming II 3 a.h.
Topics in mathematical programming and computational techniques, including large-scale problems, aspects of duality theory and other current topics in the field. Prerequisites: 588/543 and 588/549.

588/544 Software Systems for Management Balance 3 a.h.
Advanced concepts of operating systems as related to management problems, overview of operating systems, file organization, and analysis of software systems. Threading system and implementation of advanced systems. Prerequisites: Programming experience; 588/544 desirable. Spring.

588/551 Regression Analysis 3 a.h.
Construction and testing of models using linear and nonlinear regression techniques. Emphasis on selecting models for production and other engineering applications and other modifications of least squares techniques. Prerequisites: 223:35, 588/121 or equivalent. Same as 223:70. Fall.

Human Factors Courses

588/581 Human Engineering 3 a.h.
Design of man-machine systems and development of optimum work environment by applying principles of behavior science: emphasis on sensory and perceptual processes, motor skills, experimental methodology. Same as Psychology 31:155. Spring.

588/582 Psychology in Management 3 a.h.
Application of psychological principles to human relations and supervision: decision-making, leadership, communication, group pressures, other topics. Same as Psychology 31:156. Fall.

588/587 Advanced Managerial Psychology 3 a.h.
Discussions of selected recent literature on managerial psychology. Prerequisites: 588/586 or equivalent. Full, every other year.

588/593 Advanced Human Factors 3 a.h.
Discussions of selected recent research in human factors engineering. Prerequisite: 588/586 or equivalent. Full, every other year.

Transportation Courses

588/573 Transportation Engineering I 3 a.h.
Location and design of routes of transportation, operational and urban roads, links and expressways, environmental design and evaluation. Prerequisites: 223:35, 588/541. Fall.

588/574 Transportation Engineering II 3 a.h.
Applications of traffic analysis, regulation and control of services, economic analysis, and related traffic engineering techniques for analyzing and controlling movement of vehicles on highways. Prerequisites: 588/573. Fall.

588/575 Urban Systems Analysis and Design 3 a.h.
Design, simulation, and operational planning programs for integrated transportation systems and urban facilities. Topics include: urban transportation systems, regional transportation, traffic demand projects. Prerequisites: 588/574 or course work similar to 588/572. Spring.

588/576 Traffic Systems Analysis 3 a.h.
Analysis of specific traffic flow problems and appropriate mathematical traffic models and traffic simulation and management of traffic systems. Prerequisites: 588/574 or course work similar to 588/572. Spring.

588/577 Urban Transportation Planning 3 a.h.
Applications of city planning principles and traffic engineering techniques in the preparation of solutions to transportation problems: travel characteristics, forecasting and programming of traffic systems. Prerequisites: 588/574 or course work similar to 588/572. Spring.

Seminar Courses

588/591 Seminar in Transportation Engineering I 1-3 a.h.
Professional seminar for undergraduate and graduate students in urban and transportation management. May be repeated Fall, Spring.

588/592 Seminar in Transportation Engineering II 1-3 a.h.
Professional seminar for undergraduate and graduate students in urban and transportation management. May be repeated Fall, Spring.

588/593 Seminar in Transportation Engineering III 1-3 a.h.
Professional seminar for undergraduate and graduate students in urban and transportation management. May be repeated Fall, Spring.

588/594 Seminar in Transportation Engineering IV 1-3 a.h.
Professional seminar for undergraduate and graduate students in urban and transportation management. May be repeated Fall, Spring.
697/698 Advanced Topics
Advanced topics in systems engineering. Offerings based on student interest.

697/698 Individual Investigations
Individual investigations by senior undergraduate or graduate students. Permission of a supervising instructor. Fall, Spring.

698/699 Graduate Seminar
Professional seminar for graduate students in Industrial and Management Engineering. Guest lectures, student reports and seminars. Fall, Spring.

697/699 Advanced Topics: Engineering Management and Human Factors
Advanced topics in engineering management or human factors. Offerings based on student interest.

697/698 Advanced Topics: Operations Research and Engineering Statistics
Advanced topics in operation research and engineering statistics. Offerings based on student interest.

697/699 Advanced Topics: Transportation
Advanced topics in transportation. Offerings based on student interest.

697/699 M.S. Research
Research at the master's level, primarily for the M.S. thesis.

697/699 Ph.D. Research
Research at the Ph.D. level, primarily for the Ph.D. dissertation.
Faculty

The graduate faculty comprises University faculty and administrative personnel in the ranks of assistant, associate, and full professor. 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.

The Graduate College

The University of Iowa has been a leading center of advanced study for three-quarters of a century. Presently, one-fourth of its enrollment is in the Graduate College. This unusually high ratio reflects the breadth of the University's graduate programs and resources, the strength of a graduate faculty with a long tradition of personal and professional growth 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 where 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 the supervision and support of graduate students.

Advanced Degree Programs

The University offers graduate programs leading to the Master of Arts, Master of Science, Master of Business Administration, Master of Arts in Teaching and Master of Comparative Law degrees; the two-year degree, Master of Fine Arts, Educational Specialist and Master of Social Work; and the Doctor of Philosophy and Doctor of Musical Arts degrees.

The University offers advanced degrees in the following areas:

- Accounting-M.S., Ph.D.
- Anthropology-M.S., Ph.D.
- Archaeology-M.A., Ph.D.
- Applied Mathematical Science-P.H.D.
- Arabic-M.A., Ph.D.
- Art History-M.A., Ph.D.
- Asian Civilization-M.A.
- Astronomy-M.S., Ph.D.
- Biochemistry-M.S., Ph.D.
- Biology (Botany Department)-M.S.*
- Biology (Ecology Department)-M.S.*
- Biomath-M.S., Ph.D.
- Business Administration (Department)-M.A.*
- Business Administration (Interdepartmental)-M.B.A., Ph.D.
- Business Education-M.A., Ph.D.
- Chemical Engineering-M.S., Ph.D.
- Chemical Physics-M.S., Ph.D.
- Chemistry-M.S., Ph.D.
- Child Behavior and Development-M.A., Ph.D.
- Chinese Language and Civilization-M.A.*
- Civil Engineering-M.S., Ph.D.
- Classics-M.A., Ph.D.
- Community Dental-M.S.
- Comparative Law-M.C.L., Ph.D.
- Comparative Literature-M.A., Ph.D.
- Computer Science-M.S., Ph.D.
- Criminal Justice and Corrections-M.A.
- Cultural Anthropology and Linguistics-M.D.
- Cultural Studies-M.A.*
- Curriculum and Instructional Design-M.A., M.F.A., Ph.D.
- Education-M.A., M.A.T., S.S.E., Ph.D.
- Electrical Engineering-M.S., Ph.D.
- English-M.A., M.F.A., Ph.D.
- Environmental Engineering-M.S., Ph.D.
- Jimenez-M.S.
- French-M.A., Ph.D.
- German-M.A., Ph.D.
- Geography-M.A., Ph.D.
- Geology-M.S., Ph.D.
- Geotechnical-M.A., Ph.D.
- Greek-M.A., Ph.D.
- Hebrew-M.A., Ph.D.
- Home Economics-M.A., M.S.
- Industrial and Human Relations-M.A., Ph.D.
- Industrial and Management Engineering-M.S., Ph.D.
- Interior Design-M.A.
- Islamic Studies-M.A.
- Japanese-M.S.
- Japanese-M.A.
- Linguistics-M.A.
- Mass Communication-P.H.D.
- Mathematics-M.S., Ph.D.
- Mechanical Engineering-M.S., Ph.D.
- Mechanical and Industrial Engineering-M.S., Ph.D.
- Metallurgy-M.A., Ph.D.
- Music Theory and Composition-M.S.
- Nursing-M.A.
- Nutrition-M.A.
- Occidental Languages-P.H.D.
- Operative Dentistry and Embalming-M.S.
- Oceanography-M.S., Ph.D.
- Ophthalmology-M.S.
- Optometry-M.S.
- Oral Pathology-M.S.
- Oral Surgery-M.D.
- Ornithology-M.S.
- Osteopathic Medicine-M.D.
- Palmistry-M.S.
- Pathology-M.S.
- Pediatrics-M.S.
Graduate College

Graduate Fellowships
$3,200 for the academic year.

Other Sources
University and National Defense Education Act loans are available through the Office of Financial Aid.

Many departments offer additional support through teaching positions, 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 their 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 to register for the first time in the Graduate College of the University of Iowa must secure a formal admission appointment from the Director of Admissions. Applicants may obtain the proper forms from the Director of Admissions. The Director of Admissions shall not act as an ex officio member of the Committee to which he refers the application and shall not be a member of the Committee of Examiners in the session in which admission is expected. Admission applications must be made no later than May 15 for first-semester enrollment, December 1 for second-semester enrollment or May 1 for summer-session enrollment.

B. Graduate Record Examination

All applicants prior to consideration for admission should take the Graduate Record Examination (GRE) or, for applicants to graduate programs in business administration, the Graduate Management Admission Test (GMAT). Applicants for whom admission data are complete, with the exception of scores on the GRE or the GMAT, may, dependent on departmental policy, be admitted if they meet all other requirements. The GRE, or the GMAT, must be taken within one semester after registration. The test is given several times a year at test centers established under the direction of Educational Testing Service, Princeton, New Jersey. The judgment of acceptable levels of performance on this test will be made by the departmental committee established by the Director of Admissions.

Research Resources

The many and diverse research activities of the University are controlled and supported by the Office of the Vice-President for Educational Development and Research, which has an interlocking relationship with the Graduate College. For further information on the research resources of the University, see "Research Activities."

Financial Assistance

Approximately half of the University's graduate students receive some form of University-administered financial assistance. Eligibility requirements and application procedures are set forth in "Section VII. Graduate Appointments" in "Rules and Regulations of the Graduate College."

These are the primary sources of assistance:

Teaching and Research Assistantships

Available in most departments; stipends range between $2,900 and $4,400 for half-time assistance; assistantships are also eligible for tuition scholarships; nonresident assistants (one-quarter time or more) must pay resident rates.

University Teaching-Research Fellowships

For first-year graduate students entering doctoral programs; typical stipends of $3,500 a year on a year-around basis, for as many as four years; recipients have teaching and research assignments, but not every full course load 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.
fields where GRE Advanced Tests are available require these in addition to the Aptitude Test. Inquiries about the Aptitude Test may be directed to University Evaluation and Examination Service, and inquiries about the requirement of the Advanced Test should be addressed to the executive of the department in which the applicant is interested.

C. English for Foreign Students

Prior to consideration for admission, foreign 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 Quebec), 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 unfinished degree programs of other universities in the United States who have not taken this examination, or who have received a grade lower than the minimum established by the Graduate Dean, must take the TOEFL examination and receive a passing grade prior to consideration for admission.

The Graduate College will advise the departments of those students passing the TOEFL test. Individual departments may require such students to take and pass a course at The University of Iowa in English usage designed especially for foreign students.

D. Early Admissions

A student who is within four semester hours of having satisfied all the requirements for the baccalaureate degree at The University of Iowa or any other accredited college may be given conditional admission.

E. Candidacy

Admissions to the Graduate College is not the equivalent of acceptance as a candidate for an advanced degree, which must be earned through work successfully completed at The University of Iowa. (See "Section X. Master's Degrees," and "Section XII, Doctor's Degrees.")

F. Declaration of Major and Degree

Every applicant for admission must indicate on the application form the department or degree program or certificate program of his or her major interest and the degree, certificate or professional objective he or she intends to pursue. The only exceptions to this regulation are the limited number of applicants registered as "special students." (See definition of "special status" in next paragraph.) Changes in the major or degree status may be made in the course of a student's graduate study with the approval of the department to which the transfer is proposed. To initiate such actions the student must file a change of major or degree status in the Office of Admissions.

G. Status upon Admissions

All students upon admission fall into one of the following categories:

1. Regular—Students who have met the minimum requirements for admission and who have been accepted by a department, or interdepartmental degree program, for work leading to a graduate degree or certificate or professional improvement.

2. Conditional—Students who are interested in working toward a graduate degree or certificate but who are required by a department to demonstrate their ability to do satisfactory work before being admitted to regular status. To be admitted on a conditional basis, the student must be recommended by a department, which will assume responsibility for advising him or her. (See minimum grade-point requirements, "Section I.H.") The student on conditional status must achieve regular status within two sessions of registration in the Graduate College by attaining a grade-point average of at least 2.50 and acceptance by the major department, or be dismissed.

3. Special—Students in receipt of a valid bachelor's degree who wish to register for no more than two courses at a time and who are not planning to become candidates for a graduate degree or certificate. These students, relatively few in number, must obtain special permission to register from the Director of 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 2.3 grade-point average may register for only one summer session without being accepted by a department or college. (See "Section H. below"). The deadline for application for admission to the summer session will be determined by the director of the summer session and the Director of Admissions. Before admission to any subsequent session, including another summer session, the student must file an application and be admitted to regular or conditional status.

H. Minimum Requirements for Admission

Graduates of any college or university accredited by regional accrediting associations may be admitted to the Graduate College, if their academic records meet the required standards. At the master's level, a minimum grade-point average of 2.5 is required for admission to regular status. A minimum of 2.5 is required for admission to regular status. The grade-point average is computed only on graduate work if the student has completed at least 12 graduate hours. If the student has not completed 12 graduate hours, the grade-point average is computed upon the undergraduate and graduate work completed. In cases in which a student applying for admission has a grade-point average below the minimum required, but has a Graduate Record Examination score above a point designated by the Graduate Dean, his or her papers shall be forwarded to the department concerned for examination and decision.

Students applying for admission to a doctoral program must meet a minimum GPA of 2.7 based on completed graduate work, or the entire record of collegiate work if the student has less than 12 semester hours of graduate credit. Departments, or committees in charge of interdepartmental degree programs, may, and often do, set higher minimum admission 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 professional improvement except in the department of his or her appointment or closely related departments. Such petitions must have prior approval of the department of appointment, dean 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 total of 18 semester hours. This applies to the calculation of academic load only. Graduate credit is not given for courses numbered 099-199. 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.

The maximum semester hour registration for work scheduled outside of the regular 8-week summer session will be arranged on a basis proportionate to that stated above with the approval of the Graduate Dean. Nine semester hours in the regular session constitutes full-time registration. (Fellows are required to carry at least nine semester hours during a semester as a condition of their appointment.) One-quarter-time and one-third-time appointees are permitted to register for the maximum 15 semester hours per semester and eight semester hours during the eight-week summer session.

B. Courses Not Included in Total Registration

In addition to a full schedule, a graduate student may register for courses printed in the Schedule of Courses as carrying no semester hour credit.

C. 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, or no credit, by permission of the instructor. The number of courses a graduate student may take for limited or no credit is subject to the consent of the advisor and the approval of the Dean of the Graduate College.

D. Reduced Schedules for Teaching and Research Assistants and Other Appointees

1. One-half-time appointees may register for no more than 12 semester hours during a semester or six semester hours during the eight-week summer session.

2. Five-eighths-time appointees may register for no more than 10 semester hours during a semester or five semester hours during the eight-week summer session.

3. Two-thirds- and three-quarter-time appointees may register for no more than nine semester hours during a semester or five semester hours during the eight-week summer session.

4. Seven-eighths-time appointees may register for no more than seven semester hours during a semester or four semester hours during the eight-week summer session.

5. Full-time appointees, including full-time instructors, may register for no more than six semester hours during a semester or three semester hours during the eight-week summer session.

E. Renotification of Registration

No form of renotification is permitted.

F. Registration for Part of a Semester

A graduate student may register at any time during the semester or the 8-week 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 the 8-week 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. Extramural Registration

After admission to the Graduate College, registration for work done off campus is accepted for residence credit under the following circumstances:

1. Travelling Scholar Program of the Committee on Institutional Cooperation (see "Section III").

2. Research at approved locations on 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.F.").

6. As many as nine semester hours of graduate work taken at the Quad-Cities Graduate Center from faculty other than faculty of the Iowa Regents' Universities, provided the work is acceptable by the student's major department for the specified degree.

Extramural registration does not count toward residence credit in the following circumstances:

1. Coursework transferred from another institution;

2. Correspondence courses.

H. Extramural Fees and Privileges

Students registered for extramural courses for graduate residence credit must apply for admission to regular status (see "Section I.0") and pay established fees (See "Section XII.K." for special fees applicable to post-comprehensive registration), which should not be confused with extramural registration for residence credit.

I. Correspondence Courses

Correspondence study credits do not count as residence credits.
Graduate correspondence study credit earned prior to a student's acceptance to a degree candidate at The University of Iowa may be counted toward an advanced degree upon the approval of the appropriate college or department. Not more than one 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.

J. System of Course Numbers
Courses primarily for graduate students are numbered 200 or above in each department. Courses open to and counting credit for both graduate and undergraduate students are numbered from 100 to 199. Courses below 100 are not accepted for graduate credit.

K. 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.

L. 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 registers for audit. This regulation may be waived only by the Graduate Dean on the recommendation of the Student Health director or the Student Counseling Service. If a student cancels registration after the deadline date, he or she must obtain permission from the Dean of the Graduate College before he or she is permitted to register.

Section III. Traveling Scholar Program
A. Purpose
The program under the auspices of the Committee on Institutional Cooperation representing 11 universities in the Midwest enables a doctoral 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 must be recommended by his or her own graduate advisor, who will approach an appropriate faculty member at the possible host institution in regard 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.
4. Credit for the work taken will be recorded at the home university.
5. Those interested in additional information should inquire at the office of the Graduate College.

C. Conditions
CIC Traveling Scholars will not be limited to two semesters or three quarters on another campus. Each county believes it has the 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
A doctoral student on regular status shall be placed on probation if, after completing eight hours of graduate work, the student’s cumulative grade-point average on graduate work done at The University of Iowa falls below 2.70. If, after completing eight more semester hours of graduate work at this university, the student’s cumulative grade-point average remains below the requisite 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 not met, the student is returned to good standing.

C. Restriction on Students on Probation
A student on probation shall not be permitted to take comprehensive or final examinations or 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 will 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 offices, 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 revise 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 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 retaining as-
studentships, that limit on 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 policies and procedures (see II following), and such other matters as are appropriate. The nature of the departmental advisory system shall be explained to the incoming students.

II. Academic Progress, Departmental Probation and Dismissal Procedures

If a student is failing to meet departmental standards, the department shall warn the student of this fact in writing. The notification shall specify in what ways 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 dismissal. If, in monitoring of a student's progress, conditions such as conditional admission or probation are imposed, the department shall give the time of its imposition written explanation of this status and the time limits.

A student who will not be permitted to register for fall registration to meet standards shall be notified of this fact in writing with reasons for the action provided. Such dismissal may follow failure 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 student judges the dismissal decision improper, the student has a right to review. Such department shall establish procedures for handling such reviews. The procedures are to be approved by the Graduate Dean and shall afford a fair and expeditions review. A description of these procedures shall be included in the departmental regulations described above. (See "Section IV.D."

P. Graduate College Review of Departmental Dismissal

Questions involving judgment of performance will not be reviewed beyond the department level. If, however, the student feels that there has been unfairness or some procedural irregularity concerning dismissal, the student may request a review by the Graduate College. This review may be conducted by the Graduate 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 work at other institutions will be entered on the student's permanent record by the Registrar and a report of this action will be sent to the student, the thesis or major department and the Dean of the Graduate College. Credit for these courses toward an advanced degree at Iowa State must have the approval of the major department and the Dean of the Graduate College.

B. Residence Transfer Credit

After admission to the Graduate College, residence graduate credit from another Iowa Regents University may be counted as residence credit in this institution, provided such work is acceptable by the student's major department on the basis of the department's determination of its applicability towards the degree. (See "Section X.D."

C. Reduction in Credit

For courses or seminars in independent study, thesis and research an instructor may report less credit than the number of semester hours for which a student is registered.

D. Graduate Credit for Veterans

Credit may be granted for studies pursued in war and military situations under such regulations as may be formulated by the national educational agencies and under such adaptation of standing rules as the Graduate Council may authorize from time to time to meet group or individual situations. The value of such credit in satisfying requirements for a degree will be determined by the major department with the approval of the Dean.

E. Cancellation of Registration and Proportional Credit for Students Entering Military Service

1. Students who leave within the first six weeks of the semester receive no credit.

2. Students who leave within the period of seven to nine weeks receive one-half credit.

3. Students who leave within the period of 10 to 12 weeks receive two-thirds credit.

4. Grade reports for the one-half and two-thirds credit periods: (a) instructor report grade only as Satisfactory or Unsatisfactory; (b) credit is to be assigned on the basis of total registration minus exams and seminar; (c) course are to be counted toward specific degree requirements only after the student returns and then only with the department's approval.

5. Students who complete the seventh week receive full credit.

6. Grade reports for the full credit period: (a) grades to be reported only at the end of the semester; (b) credit is to be reported in specific courses.

7. In each instance the instructor reports the student's credit, grade and date of cancellation. No credit is granted unless the student's work is satisfactory at the time of leaving.

8. The amount of credit in thesis and research registration is to be reported in the Registrar by individual instructors on the above basis except that less or no credit may be assigned.

Section VI. Marking System

A. Marking Carrying Advanced Degree Credit These are A, B, C and S-satisfactorily.

B. Marking Carrying No Credit for Advanced Degrees These are D-poor, F-failed, I-incomplete, W-withdrawn without-

C. Audit

R is assigned when a student registered for no credit stands as an auditor throughout the course, if the student drops the course before the close of the term, W is assigned.
D. Incomplete
The grade of I is to be used only when a student's work during a session cannot be completed because of illness, accident or other circumstances beyond the student's control. In registrations for thesis, research or independent study, the S/U grades may be applied. (See next paragraph.) In 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 student's I is 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 grade is given.

E. Thesis, Research, Readings, Independent Study and Special Projects
Grades of S and U may be used for registrations in thesis, research, readings, independent study and special projects. S-satisfactory means that the student receives credit for the work; U—unsatisfactory means that he or she receives no credit. Neither S nor U is used in computing grade-point averages. At a later date, the instructor may change the grade to a letter grade. In addition, departments may ask the Graduate Dean for permission to use grades of S and U at described above for courses which, because of their special or experimental nature, are judged to be more appropriate for such grading. In general, these requests may be granted for no more than one semester and must be reviewed by the Graduate Council before being granted for longer periods. The type of grading system used in the above cases should always be mutually agreed 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 interdepartment degree program provided that the instructor of the course and the student's departmental advisor approve the registration. Arrangements for an S/U grading in these courses are accomplished by filing a card with appropriate signatures in the Registrar's office at the time of registration, or no later than the last day of the third week of a semester or the third day of the second week of a summer session. No change from letter grades to S/U grades or vice-versa may 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 transfer in courses in another area within the same department or program on an S/U basis. In these instances, 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) fulfillment of the Graduate College minimum grade-point average of at least 3.0; (b) a GRE score or a GMAT score above a point to be designated by the Graduate Dean; (c) 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 exceed the assistantship fees awarded. Scholarships will be credited to the student's University account.

B. Graduate College Fellowships
Fellowships are awarded by the Graduate College upon recommendation by departments to students with outstanding academic records. Fellowships are normally awarded to full-time students. The primary purpose of the awards is to permit an advanced student to complete his or her dissertation or creative project and complete the degree. Other terms of the award will be established by the Graduate Dean in consultation with the Graduate Council.

C. Faculty Research Assistantships
Faculty research assistantships are awarded to qualified graduate students and serve two purposes: (a) to provide research service to professional members of the academic staff and (b) to provide apprenticeship experience for graduate students who are in training in research. Not more than 20 hours of service per week are required for full-time assistants. Other part-time service is scaled in proportion, and a limited academic schedule is permitted (see "Section II (f)"). Appointments are ordinarily made for the nine-month academic year, but appointments may be made for other periods of time by special arrangement. Stipends vary with the qualifications of the appointee and the amount of service rendered. Assistantship appointees are appointed by the Graduate College. Faculty research assistantships are usually made by the Graduate College upon recommendation of the various departments in March of each year, although applications may be considered at other times. Assistantship appointments are made on the form provided by the Graduate Council, and should be accompanied by recommendations and letter summarizing the student's qualifications.

D. Graduate Assistantships
These assistantships serve two purposes: (a) assistance in the instructional program of the University and (b) the preparation of future college teachers. In order to achieve both aims, scholarship-supported graduate students or assistantship-trained teachers are selected for graduate assistantships. All appointments will be made by the dean of the appropriate college on recommendation of the department.
E. Eligibility for Scholarships, Fellowships and Research Assistantships

Graduate College

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 terminated. In no instance may a student be privileged or tendered an appointment until after approval for admission to the Graduate College by the Director of Admission.

F. Dismissal of Assistants

A uniform policy and procedures to be followed in the dismissal of assistants has been approved by the Board of Regents. Copies of this policy are available in the Office of the Graduate Dean.

G. Research Associateships and Predoctoral Fellowships

These provide for independent research. Appointment is made by the Graduate Dean upon recommendation of the department.

H. Credit

No academic credit is allowed for the teaching or research service for which the student receives payment as a graduate or a faculty research assistant.

I. Loans

Graduate students requiring financial assistance may apply for loans at the Office of Student Financial Aid. See "Scholarships and Loans" section of the Catalog.

J. Other Forms of Support

Many departments offer financial assistance in the form of traineeships, part-time employment on research programs or part-time teaching. Inquiries should be addressed directly to the major department.

Section VIII. Advanced Programs Offered in the Graduate College

The subject areas in which the Graduate College offers degree programs are listed under "Advanced Degree Programs" in the front part of the "Graduate Catalog" section of the Catalog.

Section IX. General Requirements for Advanced Degrees

A. Application for Degree

The student must file an application for an anticipated degree with the Registrar not later than 10 weeks after the start of the semester or one week after the start of the summer session in which the degree will be conferred. The student must have the application signed by his or her advisor. Failure to file the application by that date will result in postponement of graduation to a subsequent 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 paragraph. Students who must register for the session in which the degree is to be conferred but are away from the University campus during that session may meet this requirement by registering for independent study, research or thesis according to the practice in the various departments. Doctoral candidates who have completed all work except the final examination may register for the post-comprehensive registration described in "Section XIII. If such registration is appropriate, Master's candidates who have completed all work except the final examination may register for a fee equivalent to the postcomprehensive registration." If such registration is appropriate, registration is a correspondence course will not satisfy this requirement.

Students completing all requirements (including the final examination and thesis deposit) for a graduate degree while enrolled in the Independent Study Session may receive their degree in the following session without additional registration.

Section X. Master's Degrees

A. Kinds of Degrees

Master's programs requiring a minimum of 30 semester hours lead to the Master of Arts degree, Master of Science degree, Master of Business Administration degree, Master of Arts in Teaching degrees and such other master's degrees as are approved by the Graduate faculty.

B. Plan of Study

The applicant for a master's degree must file a plan of study approved by the advisor and the departmental executive with the Graduate College within the session in which the degree is to be granted and by a date to be established by the Graduate Dean. The plan shall meet the requirements for the degree approved by the Graduate faculty. (See also "Section IV.D. Departmental Regulations and Dissemination of Information.")

C. Major and Related Fields

The plan of study should provide for reasonable concentration in the major field of instruction, subject to the approval of the major department, and may include related subjects from other departments.

D. Residence Requirement

Of the minimum of 30 semester hours required for the degree, at least 24 semester hours must be completed under the supervision 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 regular on-campus registration. However, at least 8 semester hours on campus are required, except for those departmental programs which ensure sufficient interaction between the students and the graduate faculty and have received approval from the Graduate 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 colleges of Dentistry, Law or Medicine 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 work 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 Law, Medicine or Dentistry will be counted as part of the residence requirement for a doctoral degree in the Graduate College only when the student is registered in an appropriate joint degree program.

G. Two Master's Degrees

The granting by this University of two master's degrees simultaneously or in succession requires the satisfaction of all 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 counted in satisfying the 30-hour minimum requirement. 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 formal characteristics not later than four weeks before the graduation in which the degree is to be conferred. (See Graduate College publication: Requirements for Graduate Theses.) After approval by the Graduate College, the examination committee 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.

If the examining committee so recommends, a candidate who fails the examination may present 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 committee for the master's degree consists of at least three members of the Graduate faculty, appointed by the Graduate Dean upon recommendation of the major department or program, at least two of whom are from the major 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, and at his or her discretion the Graduate Dean may add a member to the committee.

Section XI. Two-Year Degrees

A. Master of Fine Arts Degree

This degree is awarded for creative work in the visual arts, 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 translations. Central to the program, the thesis may consist of a novel, a painting, 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 resident credit in a graduate college. This requires a minimum of 48 semester hours of graduate credit, at least 24 of which must qualify for resident 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", "J. Reduction of Old Credits", "H. Master's Degree with Thesis", "I. Final Examination", and "K. Examining Committee.

B. Specialist in Education Degree

This degree is granted upon completion of a prescribed two-year, post-baccalaureate program designed for students preparing themselves professionally in such fields as teaching, administration and supervision, and special services.

Of the minimum of 40 semester hours required for the degree, at least 24 semester hours must be completed in residence at this University of which 15 semester hours must be earned while the student is on campus within one 12-month period or during two summer sessions.

Twenty-eight of the 60 semester hours are prescribed in the area of specialization. The others are in cognate fields, supervised experience and electives. Four semester hours of research 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
Graduate College

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 master's degree in "Section X. B. Plan of Study"; "C. Major and Related Fields"; "D. Limit on Law, Medical or Dental Courses"; "E. Final Examination"; and "F. Examining 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. Major 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 work, including a research requirement, and

3. A final comprehensive examination, written or oral or both, covering all work for the degree.

The requirements 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 in 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 five general areas: social work practice, human growth and behavior, the social services and research. During the two-year graduate program, classwork is combined with field practice in social agencies or social work departments. Since classwork and field practice are arranged sequentially, students can enter the School of Social Work only in August.

For other requirements, see "Section X. B. Plan of Study"; "E. Reduction of Old Credits"; "F. Limit on Law, Medical or Dental Courses"; and "F. Examining Committee."

Section XII. Doctor's Degree

A. Character of Degree

The University awards two doctorates, the Doctor of Philosophy and the Doctor of Medical Arrt. 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 competency in the discipline. The Doctor of Medical Arrt. degree indicates marked excellence in performance and pedagogy.

B. Prerequisites

The applicant must present evidence of having completed a satisfactory amount of undergraduate work in the subject proposed for investigation or, in the case of deficiencies, must register for prerequisite courses.

C. Residence Requirement

The doctorate is granted primarily on the basis of achievement rather than on the accumulation of semester hours of credit; however, the candidate is required to have completed at least three years of residence in a graduate college. At least part of this residence must be spent in full-time involvement in one's discipline, at this University, beyond the 24 semester hours of graduate work; this requirement can be met either by: (1) enrollment as a full-time student (nine semester hours minimum) in each of two semesters or (2) enrollment for a minimum of six semester hours in each of three semesters during which the student hold(s) at least a one-third-time scholarship certified by the department as contributing to the student's doctoral program. (For purposes of record and assessment of fees, student registration should reflect accurately the amount and kind of work undertaken in the Graduate College. All doctoral programs, including acceptable transfer credits, will contain a minimum of 72 semester hours of graduate work.)

D. Plan of Study

The development of a plan of study at the doctoral level is the special responsibility of the student working together with his or her advisor. A formal plan of study must accompany the departmental request to the Graduate College for permission to conduct the comprehensive examination. The plan will provide a listing of all course work taken which applies toward the degree and a listing of courses in progress or to be completed after the comprehensive examination.

E. Ad Hoc Interdisciplinary Programs

A student may propose a program 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 will be designated as the sponsoring department. Final 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 departmental faculties. The degree will be awarded in the interdisciplinary field stipulated in the approved program and, parenthetically, the name of the sponsoring department.

F. Reduction of Old Credits

Courses taken one or more years prior to the comprehensive examination will be evaluated by the major department in order to determine the amount of credit that shall be allowed for each 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.

G. Limit on Professional Courses

Work taken by a student in the colleges of Dentistry, Law or Medicine while enrolled for a professional degree may be credited to a graduate program leading to a professional degree if it is taken after the student has satisfied the requirements for a bachelor's degree at this University. The work accepted from the professional college must be directly related to the student's major field of study in the Graduate College, and the plan of study must be approved by the student's advisor and the major department. Work completed while registered for a professional degree in Law, Medicine or Dentistry will not be counted as part of the one academic year which must be spent in residence as a doctoral student in the campus of this University.
H. Joint Program for Master’s and Doctoral Degrees

Those students who expect to continue their training through the doctor’s degree may file a joint program for the master’s and doctor’s degrees. The master’s examination may be combined with the comprehensive examination for the doctorate for these candidates. The examining committee will file separate reports of its actions on the final examination for the master’s degree and for the comprehensive examination. Upon recommendation of the department and approval of the Graduate Dean, students who are well qualified by previous training may submit a plan of study that leads directly to the doctoral degree without earning the master’s degree as an intervening part.

I. Requirement in Foreign Languages

There is no general Graduate College requirement in foreign languages. Those departments which 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 departmental statements of standards and procedures (See "Section IV.D."). Departmental executive officers are responsible for reporting completion of requirements to the Registrar for entering on the student’s record.

Specifications of departmental requirements in foreign languages are filed in the Graduate College office and may be changed upon the initiative of the departments.

J. Comprehensive Examination

The candidate must pass a comprehensive examination, consisting of written or oral parts or both at the discretion of the major department. Admission to the comprehensive examination is granted upon the recommendation of the major department, the filing of the plan of study and the approval of the dean of the Graduate College. A student must be registered in the University at the time of the comprehensive examination, which must be passed not later than the session prior to the session of graduation. This examination, administered only on campus, is intended to be an inclusive evaluation of the candidate’s mastery of the major and related fields of study, including the tools of research in which competence is expected.

The comprehensive examination is not a deferred qualifying examination. It is intended to evaluate the candidate’s mastery of his or her subject or at near the end of his or her formal preparation and prior to the completion of the dissertation. The comprehensive examination and the final examination, which is concerned chiefly with defense of the thesis and related subjects, are the two principal examinations for the doctoral degree.

The comprehensive examination will be evaluated by a meeting of the committee and reported as satisfactory, satisfactory with reservations or unsatisfactory to the Graduate College office within 14 days after the completion of the examination. "Two unsatisfactory votes will make the committee report unsatisfactory. The nature of a satisfactory examination should contain the name of the supervising professor for the candidate’s dissertation.

In the event of a report with two or more votes of "satisfactory with reservations," exact stipulations of the committee should be recorded in the report form. If the stipulations involve further examination in a particular area of study, the statement should be specific in defining the area, in requiring additional courses or other procedures, and in specifying the time and method of satisfying the stipulation. The candidate will not be admitted to the final oral examination until such stipulations have been satisfied.

The executive of the major department should promptly send a written report to the Graduate College giving date of removal of "reservations."

In the event of a report of unsatisfactory in a comprehensive examination, the committee may grant the candidate permission to present himself or herself for reexamination not sooner than four months after the first examination. The examination may be repeated only once, at the option of the department.

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 an application which has been approved by his or her advisor, the departmental executive and the Graduate Dean.

All registrations should accurately reflect the amount and type of work undertaken, the use of University facilities and the amount of consultation with the faculty. The student should register for the course, research and thesis necessary to complete the plan of study. When the registrations required for the plan of study have been completed, the student may meet the continuing registration requirement by paying a special minimum fee (Pr.D. postcomprehensive registration) for any semester in which the department (i.e., department chairman or director of graduate studies) and the student’s advisor determine that the student is neither making significant use of the University faculty (except library privileges) nor participating in consultation with the faculty. 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 graduation date at which the degree is to be conferred and deposited there in final form ten days before graduation.

Regulations regarding preparation of the dissertation copy shall be promulgated by the Dean of the Graduate College. Dissertations will be microfilmed and thus made available on a permanent basis. An abstract of the dissertation, not to exceed 600 words of text, is to be deposited with the dissertation. The abstract must be approved and signed by the dissertation advisor. The abstract is published in the journal of Dissertation Abstracts. One copy of the dissertation typescript is bound and indexed at the University Library.

If the dissertation is in some nonprint form (e.g., painting, statue, performance in music) the librarian in charge of these will help the student and faculty advisor work out an appropriate method of preparing the accompanying manuscript, if such help is needed. Once the manuscript is accepted, it is treated the same as any other.

Written dissertations shall be made available to all members of the examining committee not later than two weeks before the date of the examination.

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 investigation—not a mere recapitulation of the procedures followed; 2) intensive questioning on areas of knowledge constituting the immediate context of the investigation.

The final examination may not be held until six sessions following successful completion of examination and until the first check of the dissertation by the Graduate College; however, a student must take the final examination no later than five years after passing the comprehensive examination. Failure to meet this deadline will result in a reexamination of the student to determine his or her qualifications for taking the final examination. The procedures to be followed are the same as those for the comprehensive examination. (See "X.H.J. Comprehensive Examination.")

Final examinations for the doctorate are open to the public. Members of the faculty of the Graduate College are especially invited to attend and, subject to the approval of the chairman, to participate in the examination.

The report of this final examination is due in the Graduate office not later than 48 hours after the date of the examination. The final examination will be evaluated as satisfactory or unsatisfactory. Two unsatisfactory votes will make the committee report unsatisfactory. In case of a report of unsatisfactory in the final examination, the candidate may not present himself or herself for reexamination until the next semester. The examination may be repeated only once, at the option of the major department.

O. Examining Committees

The comprehensive and final examinations are conducted by committees of no fewer than five members of the Graduate faculty appointed by the Graduate Dean upon recommendation of the major department, except that departments may ask 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 required in those cases where a related field outside the major department is included in the comprehensive examination. For the final examination one member of the committee must be a member of the Graduate faculty from outside the major department.

Upon recommendation of the major department, the Graduate Dean may appoint additional qualified persons (not necessarily members of the Graduate faculty) to serve as voting members of the examining committees, and at his or her discretion the Graduate Dean may add a voting member to the committee.

Exceptions

Petitions to waive these regulations may be made for appropriate and justifiable reasons on behalf of any graduate student through the departmental executive to the Dean and the Graduate Council.
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 first-year seminar in which small groups of students have opportunities for more individual expression, closer faculty relationships, the writing of several research papers, and a closer approach to graduate-level instruction.

Each first-year course has a specific function in helping students develop analytical abilities and placing 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 two, a perspective course and a papers course. Before they graduate, all must also take a second course in constitutional law. Of the second- and third-year courses, three are required.

Students are encouraged to enroll in independent research and seminar faculty members. Additionally, the College has instituted a second-year seminar, which is designed to promote research and development in a particular field of law.

Students may also take courses in other colleges of the University. To receive credit for such a course, the student must obtain prior permission of the Dean of Law.

The Joint Program

In addition to its regular program leading to the Juris Doctor degree, the College offers a joint program leading to the J.D. degree and an advanced degree (M.A. or Ph.D.) from a participating department of the University of Iowa Graduate College.

Under this program, if a student takes a course which is relevant to both degrees, the course can 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 concentrate on 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.

Summer Session

Regular classwork of the summer session will extend over 11 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. (1) six semesters of not less than 12 semester hours each; or
2. (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. (3) four semesters of not less than 12 semester hours each plus two 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:

<table>
<thead>
<tr>
<th>Numerical Grade</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100</td>
<td>A</td>
</tr>
<tr>
<td>80-89</td>
<td>B-</td>
</tr>
<tr>
<td>75-79</td>
<td>B</td>
</tr>
<tr>
<td>70-74</td>
<td>B+</td>
</tr>
<tr>
<td>65-69</td>
<td>C</td>
</tr>
<tr>
<td>60-64</td>
<td>C-</td>
</tr>
<tr>
<td>0-59</td>
<td>D</td>
</tr>
</tbody>
</table>

A first-year student who fails to maintain a cumulative weighted average of 65 after registering for 24 or more semester hours of work shall be ineligible to continue in the College of Law. All other students must maintain a cumulative weighted average of 65 to be eligible to continue in the College.

Students whose cumulative weighted average is below 65 for the first two semesters, but whose weighted average is 65 or better during the second semester, will be reinstated on probation for the third semester. They must achieve a cumulative weighted average of 65 by the end of the third semester or be ineligible to continue further.

Any upperclass student whose weighted average is below 65 for the full academic year shall be dropped from the College of Law.
Graduation Honors
The J.D. degree may be granted with special honors as follows: With Highest Distinction—cumulative weighted average of 85 or more; With High Distinction—cumulative weighted average of 80-84; With Distinction—cumulative weighted average of 75-79.

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 habitus corpus and civil projects at the Men's Refractory in Anamosa, a habitus corpus project at the University of Iowa's School of Social Work, and the legal aid office at the University of Iowa Hospital.

Women's 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.

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 with 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 upperclassmen who have demonstrated ability for research and scholarship.

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
Preference 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 fall semester or summer session he or she wishes to enter.

The College has received by the deadline date, the applicant's law school data assembly report and law school admission test results. The applicant is responsible for having all of his law school transcripts sent to the College of Law. The Law School Admission Test is administered by the Educational 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.
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 prospective students not completing their undergraduate study in residence at The University of Iowa.

Fulfillment 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 Opportunities Program and gives individual consideration to applicants 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 withdrawal (evidenced by a letter from the dean of the school from which he or she is transferring), meets the admission requirements for entering students at this school and has done substantially above average work in the law school be or she attended. No more than 30 semester hours of resident credit may be transferred from another school. Where an applicant has completed more than one year of law, advanced standing will be permitted only in exceptional cases, and no more than one year’s credit will be granted.

Advance Deposit
Accepted applicants are required to make an advance nonrefundable deposit of $50 by April 1. Applicants who are accepted after April 1 must make the deposit within two weeks after being notified of favorable action on their applications. For those who enroll, the deposit is credited toward the first year tuition bill. An applicant who fails to make the deposit within the time specified forfeits his or her place in the entering class. The $50 will be refunded if an applicant cannot enroll because of circumstances beyond the student’s control. A student who is admitted but is forced to give up his or her place in the class because of a service obligation will be automatically be readmitted upon timely application at the conclusion of his or her 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.

Courses
91104 Civil Procedure 2-4 s.h.
After a brief overview of the law, the course deals primarily with practical problems, legal and procedural issues, evidence, trial process, remedies and proof, jurisdiction and relief and judgments and judgments on chancery, pleading of parties, the role of the court, issues in litigation, and discovery. Designed to give student comprehensive, cohesive view of limitation of rights under modern practice.

91116 Constitutional Law 2-4 s.h.
Allocation of governmental powers according to constitutional criteria; judicial function in constitutional cases; relationships among several branches of national government; federal system; powers delegated to national government; powers reserved to states; role of judicial process in structuring limits within which society operates; development of legal system and relationships among several institutions within system.

91130 Contracts and Sales Transactions 2-4 s.h.
Purpose, development, scope of judicial protection accorded persons to contractual agreements, as modified by legislation; creation of covenants; their performance, construction and interpretation, and remedies available upon breach, as well as the Sales Article of Uniform Commercial Code as Article relates to unenforced sales transactions; role of law in enforcing commercial arrangements, differences between judicial and legislative decisional processes.

91131 Criminal Justice 2 s.h.
Considers such questions as what actions should be criminal and why; what steps can be taken to deal with these issues; contemporary trends; role of law in dealing with behavior; substantive law of homicide and theft; importance of integrating social sciences and law in research socially viable legal system.

91132 Criminal Justice 2  s.h.
Describes same as for 91131.

91135 Lawyers, Their Work and Their Responsibilities 2 s.h.
Nature of various kinds of legal practice, including such things as: analysis of and payment for legal services; personal conflicts of interests in legal practices; and regulation of the legal profession; the prospects of client care; innovation of legal systems in so many different institutions with so many different factors in the evolution of the law. Particular emphasis on non-legislative aspects of the lawyer’s work and responsibilities.

91136 Property I 2-4 s.h.
Concept of ownership as one of basic foundations of law; acquisition of property and limitations on its use and disposition, in cooperation with traditional common law methods and thinking; source of property and public record of ownership; secured interest in movables and immovables; property transfer; development of the law.

91137 Resource Planning 2-4 s.h.
Problems and processes associated with allocation and regulation of land, air and water resources, including zoning and other land use controls; need for management programs, environmental quality controls; restrictions on use of depletable and other resources, and methods of allocating use rights to resources are comparable to ordinary forms of ownership; relationships between law and other disciplines; administrative aspects of resource planning; use of law to achieve affirmative goals.

91141 Energy in Contemporary Society 2 s.h.
Same as Geology 44-191.

91142 Criminal Procedure 3 s.h.
One of three courses in legal procedure is taken each year and studied in subseveral.

91146 Administrative Law 3 s.h.
Detailed analysis of tax and regulatory bodies and responsibilities; federal income taxation; complex issues faced by administrative agencies in tax matters; rate structures and administrative proceedings; each student required to prepare numerous documents relative to probable legal issues and resolve them, including preparation of an entire investor’s income tax return. Prerequisites: 91112 and 91118 or 91158.

91162 Administrative Law 2 s.h.
Formal and informal procedures, processes and functions of state and federal administrative agencies, including legislative, executive and judicial control of administrative action.

91163 Commercial Law 3 s.h.

91167 Advanced Criminal Procedure 3-4 s.h.
Iowa and federal court rules of criminal procedure receive primary attention, especially as they relate to discovery, preliminary hearings, joinder and severance of defendants, and expert witnesses and evidence of mental health. Emphasis on practical student participation in trial proceedings during trial, controlling proceedings, expert witnesses, processes examined from perspective of both prosecutor and defense attorney.

91169 Advanced Tax Problems 2 s.h.
Some topics are "off the path" covered by other law courses in the curriculum and to provide significant experiences in tax research and drafting. Problem method of instruction is used and heavy reliance is placed on prior preparation and classroom discussion. A wide variety of topics is covered, such as partnership taxation, qualified and unqualified deferred compensation plans, state and local taxes, partnerships, corporations, real estate transactions, stock exchanges, and several methods of accounting, income capital gains and tax policy issues. Prerequisites: 91125 and 91149.

91173 Armed Services Law 2 s.h.
to resolution of inter-personal problems and to planning for the incidence of such problems in the near future. 91.294 Insurance 2-3 a.h.
Principles of general liability in insurance law, including doctrine of assumption of risk, construction of insurance policies, and defenses to insurance liability. 91.294 Introduction to International Law 2-3 a.h.
Examine the past, present, and future role of law in promoting world public order among a broad spectrum of political and economic institutions, international organizations, and international practices of nation states. Emphasis will be on the role of the United Nations and other international organizations. 91.294 Jurisprudence 2-3 a.h.
Selected legal philosophies; particular attention to epistemology and to jurisprudence as a guide to legal practice. 92.294 Juvenile Delinquency 2-3 a.h.
Defining delinquent behavior; various causal theories of delinquency, measurement and control of delinquency; developmental systems. 92.294 Labor Law 2-3 a.h.
Rights of employees to organize into unions; effects of collective bargaining; arbitration; collective-bargaining agreements; labor-management disputes. 92.294 Labor Relations 2-3 a.h.
The role of labor relations in the economy; the functioning of labor laws; individual rights in labor disputes. 92.294 Labor-Management Relations 2-3 a.h.
Labor-management relations and collective bargaining in the economy. 92.294 Organization and Administration of Labor Relations 2-3 a.h.
Organization and administration of labor relations. 92.294 Public Administration II 2-3 a.h.
Students in 92.292 may enroll for this additional credit once on a self-paced basis. 92.294 Real Estate 2-3 a.h.
Study of real property and personal property, including the legal aspects of ownership, tenancy, and security interests. 92.294 Real Estate Law 2-3 a.h.
Real estate law with an emphasis on related legal aspects of property, tenancy, and security interests. 92.295 Real Estate Law 2-3 a.h.
Real estate law with an emphasis on related legal aspects of property, tenancy, and security interests. 92.296 Real Estate Law 2-3 a.h.
Real estate law with an emphasis on related legal aspects of property, tenancy, and security interests. 92.297 Real Estate Law 2-3 a.h.
Real estate law with an emphasis on related legal aspects of property, tenancy, and security interests. 92.298 Real Estate Law 2-3 a.h.
Real estate law with an emphasis on related legal aspects of property, tenancy, and security interests. 92.299 Real Estate Law 2-3 a.h.
Real estate law with an emphasis on related legal aspects of property, tenancy, and security interests.
Problems In International Law and Policy

Current problems of public international law and policy, such as control of the resources of the sea and control of international trade; students are encouraged to begin preliminary reading before commencement of the autumn term, and are required to complete a one-hour final paper.

Land Use Planning Seminar

Problems arising in controlling use of land through zoning, public and private land management, urban renewal, eminent domain, development of services and subdivisions and development control; mechanisms of control through various governmental agencies, city, regional, state and federal; coordination of control efforts.

Legislative History

Examinations major episodes which have been of importance in shaping modern law; development of tax by jury; religious and common law; royal courts and the writ system; beginnings of Parliament; contract, law and equity; and 17th-century conflict for supremacy; constitutional law, Parliament, the king, and the other organs of government; end of which many of our concepts of civil liberties were. Attention directed prior to 1689 to substantive law applied at particular times as by processes of legal development in England, the colonies, and limitations encountered in attempts to resolve critical issues.

Partnership Planning

The Police

Examinations the police from a number of different viewpoints. How do police control will be major in concentration and development of police forces, varying and sometimes conflicting rules of police in both urban and rural areas. Organization, management, and operations at police departments, police personnel including recruitment, training, and promotion of patrolmen, police culture, and police community relations including relations between police and minority groups and juveniles. Particular attention to police accountability and methods of controlling police behavior both internal and external.

Problems of Public Law

Selected problems in constitutional law and administrative law. Student interest will largely dictate specific topics selected. Areas from which specific topics may be chosen are: equal protection of the laws including sex and race discrimination; due process and the right of students, employees of government, government employees, and the mentally ill; impairment of property issues on the state and national level; laws administrative agencies, laws administrative procedures act, and administrative law reform in Texas; right to a hearing before administrative agencies; public participation in formulation of administrative policy; control over the informal administrative process. Prerequisites or co-requisites: 91:232 Constitutional Law I.

Selected International Law Problems

Survey of specialized body of law which has grown up around Indian peoples; included are considerations of development of sovereignty provisions over Indian peoples, civil, criminal and judicial jurisdiction on federal reservations, special problems of property issues and land use affecting Indian lands, Indian hunting and fishing rights, the history of federal Indian policy and its impact on modern Indian policies, white self-government, and federal Indian benefits and bureaucracies.

United States Supreme Court

In-depth study; paper required. Prerequisites: 91:116 and 91:232 or 91:295 recommended.

Public Employee Collective Bargaining

In 1974 Iowa created the Public Employment Relations Act authorizing collective bargaining for public employees at all levels of government. This seminar will study in detail the statutory provisions and regulations and compare them with the comparable provisions of other public employment collective bargaining legislations, the effect on other covering federal government employees, and the National Labor Relations Act. The seminar will place considerable emphasis on problems of administration and implementation. Students will be encouraged to choose a paper topic some aspect of the general subject of public employee collective bargaining that includes both an important legal problem as an actual application of that problem in practice. Prerequisites or co-requisites: 91:201 Labor Law or permission of the instructor.
The University of Iowa College of Medicine accepts 175 freshman students each year into its four-year course of study leading to the degree, Doctor of Medicine. Its faculty members provide undergraduate and graduate instruction in the biomedical sciences of anatomy, biochemistry, microbiology, pharmacology, physiology and biophysics, preventive medicine, environmental health and radiation biology, to some 1,500 non-medical students each semester—most of them from the three other University of Iowa health professions colleges: Dentistry, Nursing and Pharmacy, but many others from the life science areas of the College of Liberal Arts.

The College of Medicine is responsible for allied medical programs for the education of Physician’s Assistants, Medical Technologists, Physical Therapists and Nuclear Medicine Technologists. It carries on a year-round program of continuing medical education, in which several thousand practicing physicians update their knowledge and skills through “refresher,” short-courses, clinics and conferences each year.

Beyond its academic responsibilities as the only college in Iowa offering programs toward the M.D. degree, the College of Medicine is concerned with public health issues of distribution and organization of health care services. Medical faculty members advise and serve as members of state and regional health planning councils, health boards and various health agencies; some faculty also take part in the University’s Health Services Research Center.

To provide opportunities for young physicians to experience the satisfactions of providing primary care in a community setting, undergraduates and medical students have several opportunities to gain first-hand experience in physicians’ offices and community hospitals. For medical graduates, a statewide system of family practice residency programs provides concentrated opportunity to learn his specialty in one or another of 16 community hospitals in eight cities throughout the state. The College of Medicine promotes and sponsors experimental programs that demonstrate methods of organizing health services to the local level.

Accredited by the American Hospital Association and the Association of American Medical Colleges, the College of Medicine meets the requirements of all state licensing boards. Its diploma admits the holder to all privileges granted to graduates of all medical colleges before such boards.

The M.D. Program

The Doctor of Medicine in Iowa differs in several significant ways from the traditional forms 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 interest.

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 these 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, entomology and pathology.

Faculty

All faculty members are full-time, their work in practice and research being part of—not a part from—their work in teaching. Many have earned national and international honors.

Facilities

Classes are taught in the Basic Sciences and Medical Laboratories buildings. A new Health Sciences Library is at the core of the medical campus.

Clinical Experience

Clinical experience is provided in the 1,181-bed University Hospitals and Clinics complex, in the adjacent Veterans Administration Hospital, and in a score of affiliated hospitals and ambulatory care centers throughout the state. College of Medicine and College of Dentistry faculty members comprise the 325-member clinical staff for University Hospitals and Clinics, whose 16 clinical services are directed by heads of the corresponding academic departments in those colleges. These faculty members also provide instruction for the 470-plus resident physicians and dentists who comprise the House Staff of University Hospitals, which
provide facilities for teaching all major medical specialties, for residencies in all such specialties and for fellowships in a number of subspecialties. University Hospitals and Clinics serve as a tertiary-care center for the State of Iowa and portions of adjoining states, with most patients being referred for care and treatment not readily available in their home communities. Some 36,000 patients are admitted to the University Hospitals complex each year, while 47 specialty clinics serve another 300,000 ambulatory patients annually. More details concerning University Hospitals and Clinics, Veterans Administration Hospital, and other relevant academic and health service units may be found in the University of Iowa Health Center section of this Catalog.

Learning Resources Unit

The Learning Resources Unit of the College of Medicine is composed of faculty, staff and administration. The Unit has four major charges: to provide educational supervision, to provide audio-visual services, to initiate and cooperate in educational research endeavors and to conduct teacher education activities.

Financial Aid

Loans are available to medical students on the basis of 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. Smaller and shorter-term loans are usually available through the Office of Student Services of the College of Medicine.

The College of Medicine awards approximately 100 tuition scholarships each year. Most scholarships are awarded on the basis of need, although, in accord with the donor's wishes, some are awarded on other criteria. These awards range in value from $500 to $1500.

Annual summer research fellowships with a stipend of $1000 are awarded on the recommendation of the sponsoring faculty members.

Admission

The College of Medicine participates in the American Medical College Application Service (AMCAS), a nonprofit centralized application processing service for applicants to U.S. medical schools. Preliminary applications are processed by AMCAS 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 1.

Final applications will be forwarded to those persons whose AMCAS applications pass a review conducted by the College of Medicine. The fee of $10 must accompany the final application 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. Each applicant must also file with the Office of Admissions an official transcript from each college he or she has attended.

An application for admission to the College of Medicine must have:

- Received the baccalaureate degree, or
- Completed three years of a curriculum qualifying him or her to

receive the baccalaureate degree after completing the first year in medicine, or

Completed three years of a baccalaureate program meeting the general graduation requirements of the college he or she is attending.

Prospective students must have earned at least 94 semester hours of credit, or the equivalent, including the following:

- Physics: a complete introductory course.
- Mathematics: college algebra and trigonometry, or advanced college mathematics for applicants who completed college al-
  - gebra and trigonometry in high school.
- Chemistry: as a minimum, a complete introductory course in organic chemistry, ordinarily following a complete introductory course in modern general chemical principles.
- Biological Sciences: a complete introductory course in the principles of animal biology, or zoology and botany (not botany alone), and an advanced biology course. All the foregoing must be taken with appropriate laboratories.

Fullfillment 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 Col-

lege of Medicine will select those who appear to be best qualified for the study and practice of medicine.

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.

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 admission 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 candidates exclusively under the Early Decision Plan. Under this plan a single early application is submitted to one's first choice school by August 15 and the decision is made by October 1. Applicants are required to take the Medical College Admission Test (or the replacement test sched-

uled for introduction in 1977) administered by the Association of American Medical Colleges in May or October of the year pre-

ceding the for which they are seeking admission. Students may make arrangements to apply for this examination through the University's Evaluation and Examination Services.

Personal interviews will be arranged as desired by the admis-

sions committee.

Applicants accepted on or prior to February 15 must submit $50.00 advance payment by March 1. Applicants accepted after February 15 must submit this payment within two weeks after they receive notification of acceptance. The advance payment is credited toward tuition and fees.
Anatomy

Department Head: C. H. Williams

Full-time professional faculty committed to excellence in teaching, research, and patient care.

Departments: Anatomy, Physiology, and Microbiology

Program Accredited by the Council on Medical Education of the American Medical Association.

Anatomy Department-

The Department of Anatomy is committed to providing high-quality education in anatomy and biomedical sciences. The department offers a variety of courses and programs to meet the needs of students pursuing careers in the health sciences. The department faculty is dedicated to excellence in teaching, research, and patient care.

Courses Offered:

1. Principles of Anatomy
2. Developmental Anatomy
3. Clinical Anatomy
4. Neuroanatomy
5. Histology
6. Immunology

Research Projects:

- Neuroplasticity
- Stem Cell Research
- Neurodegenerative Diseases

Graduate Study

The Department of Anatomy offers graduate programs leading to the Master's and Ph.D. degrees. These programs are designed to prepare students for careers in research, teaching, and industry. Students are encouraged to pursue interdisciplinary research projects and to develop strong collaborations with other departments.

Financial Support:

The Department provides opportunities for students through teaching and research assistantships, as well as fellowships and grants from external funding agencies.

Student Organizations:

- Anatomy Club
- Biomedical Research Club

Cultural Diversity:

The Department values diversity and encourages students from all backgrounds to pursue careers in the health sciences. The Department is committed to creating an inclusive environment that fosters collaboration and innovation.

Contact Information:

Department of Anatomy
123 Main Street
Anytown, USA 12345
Phone: (555) 123-4567
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carbohydrates, hormonal control mechanisms, structure and function of nucleic acids, gene control in higher organisms, biochemistry of glycoproteins and carbohydrate metabolism, mechanisms and control of protein synthesis, biochemistry of proteases, characterization of liver and hepatoma enzymes, clinical biochemistry, neurobiochemistry, lipid metabolism, thermo-mechanical mechanisms, conformational and allosteric investigation of glycolytic enzymes, analysis of enzyme systems utilizing co-enzymes and folic acid coenzymes, enzyme mechanisms, bio-synthesis of active peptides and biochemical changes during development.

Facilities

The University Health Center’s current $80-million expansion program provides new quarters for biochemistry in the Basic Sciences Building in the spring of 1972. Biochemistry shares this new building with the departments of Anatomy, Microbiology, Pharmacology, and Physiology-Biophysics. Research and teaching laboratories in each department are interspersed, and faculty members with common interests are grouped around cores of important research facilities and equipment, further helping to bring the various groups into a more informal relationship with one another.

The individual staff research laboratories are large and uncrowded. The building also provides generous space for many common-use facilities, including instrument rooms, teaching rooms, cold rooms, glassware kitches and stockrooms. Research is facilitated by good technical support in such areas as glassblowing, machine shop, animal quarters and electronics, and by services supplied by photographers, illustrators, a secretarial staff, stockroom supervisors, purchasing agents and technicians. The Department is well supplied with virtually all of the equipment used in modern biochemical research including analytical and preparative ultracentrifuges, fluorimeters and nuclear magnetic resonance spectrometers. Auxiliary equipment includes infrared absorption and optical rotatory dispersion instruments, amino acid analyzers, gas chromatographs, liquid scintillation counters, tank, plate and gel electrophoresis equipment, an electron microscope, instrumentation for protein X-ray crystallography, a computer and a number of Cary spectrophotometers.

In addition to the departmental library, excellent resources are provided by the new Health Sciences Library and the various other departmental branches of the University Libraries system.

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, medical, physical or chemical sciences are encouraged to apply. Required preparation includes advanced college-level coursework in physical chemistry, biology, physics and mathematics through calculus. Students of demonstrated ability may make up deficiencies after enrollment.

Beyond the general Graduate College admissions requirements (see the Graduate College section of the Catalog), minimum requirements of the Department include an undergraduate grade-point average of 3.0 (A=4), 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.

Courses

09:102 Senior Undergraduates 3-4 a.h.
- Basic microbiological discrimination of major nutrient functional classes. Required of all majors. No prerequisites.

09:105 Biochemistry 3 a.h.
- One-semester lecture course focusing on chemical and molecular dynamics of living cells as observed in ten lectures. Required of all students in zombie chemistry.

09:201 The Chemistry of Biological Macromolecules 3 a.h.
- Chemistry of major functional groups in compounds in biological systems and factors which influence their metabolism, properties of biomacromolecules, role of water, energy and other solutes. Prerequisite: Chemistry 4-122.

09:301 Introduction to Biochemistry 3 a.h.
- Molecular dynamics of biological systems, how energy is obtained, stored and utilized by living systems, breakdown of matter as observed and controlled, how life is maintained, how molecular genetics function and how pressure of differentiation is maintained. Prerequisite: 9:102.

09:304 Molecular Genetics 4 a.h.
- Selected classical genetic phenomena, recombination, gene mapping, pathways and control of eukaryotic nucleic acids. DNA as genetic material; primary and secondary structure of DNA and RNA; identification of DNA, RNA and protein; mutations of proteins and protein unit III; translational and transcriptional control of protein synthesis; molecular biology of differentiation. Prerequisites: 9:190 and 9:320; Zoology 37:112 or equivalent, with consent of instructor. Same as Zoology 37:112.

09:320 Physical Biochemistry 4 a.h.
- Theory and interpretation of physical measurements which relate to bio-chemical systems. Topics include thermodynamics of macromolecular systems, statistics of electrodynamics, multiple equilibria, transport processes, inhibitors, spectroscopy, light scattering and Fourier transform; lecture, discussion; one conference.

09:450 Physical Biochemistry 4 a.h.
- Techniques for the mathematical calculation of the measurements which relate to biochemical systems. Topics include multiple equilibria, transport processes, inhibitors, spectroscopy, light scattering and Fourier transform; lecture, discussion; one conference.

09:451 Physical Biochemistry 4 a.h.
- For graduate students and advanced undergraduates in biochemistry and other science; quantitative and qualitative experiments on identification, fractionation and characterization of components of biochemical systems. Use of modern instruments for special equipment; spectroscopy, chromatography, electrophoresis, thin-layer chromatography and thin-layer electrophoresis. Prerequisites: 9:190 and Chemistry 4-122.

09:456 Physical Biochemical Techniques 2-4 a.h.
- For graduate students and advanced undergraduates in biochemistry. Techniques for the mathematical calculation of the measurements which relate to biochemical systems. Topics include multiple equilibria, transport processes, inhibitors, spectroscopy, light scattering and Fourier transform; lecture, discussion; one conference.

09:485 Research Independent Study 1-4 a.h.
- Independent study for students interested in research in areas of interest to them. Arrangements made by student with faculty member in advance of enrollment. May be taken for credit in biochemical research.

09:486 Biochemistry Tutoring 1-3 a.h.
- For Health Science Students. An introduction to modern biochemistry for students entering the Health Science College in the fall semester; who have had insufficient chemistry background. Consent of instructor required.

09:181 Biochemistry for Dental Students 4 a.h.
- Designed for dental students who have not had prior biochemistry. Count as one course, or as separate course; students admitted only after consultation with professor.

09:182 Biochemistry for Pharmacy Students 4 a.h.
- Designed for students who have not had prior biochemistry. Credit as one course, or as separate course; students admitted only after consultation with professor.

09:183 Biochemistry for Medical Students 4 a.h.
- Designed for students who have not had prior biochemistry. Credit as one course, or as separate course; students admitted only after consultation with professor.

09:185 Biochemistry for Physician’s Assistant Students 2 a.h.
- Aspects of general biochemistry necessary for understanding the biochemical basis of human disease, analysis of appropriate clinical cases. Taught primarily and
Endocrinology

Good cross-section of patients is available, due to the mixture of private and clinic patients, including a large number referred from the student Health Services.

Various elective are available for fourth-year medical students, including clinical experiences, endocrinology research and special studies.

Courses

06:11 Clinical Endocrinology 2 hrs.
Spring term. Fourth-year medical school junior; lectures, independent study materials, clinical experience.

06:23 Dermatology Electives
arr.
Fourth-year medical students spend four weeks in advanced clinical experience, dermatology surgery and special assignments.

Research in Endocrinology

06:20 Research in Endocrinology
arr.
Spring term. Involves basic sciences, clinical sciences, or research in endocrinology.

Special Studies in Endocrinology

06:08 Special Studies in Endocrinology
arr.
Spring term. Involves basic sciences, clinical sciences, or research in endocrinology.

Endocrinology

Endocrinology is an interdisciplinary program involving faculty members from the departments of Anatomy, Biochemistry, Internal Medicine, Obstetrics and Gynecology, Pathology, Pharmacology, Physiology and Biophysics, and Zoology. The program is coordinated by the chairman of the Department of Physiology and Biophysics.

The scope of the Department of Endocrinology is the teaching of medical students and training of endocrinology residents, care of patients with endocrine disease and research in the field of endocrinology. This is one of very few endocrinology programs in the country with a required rotation for medical students; each third-year medical student spends two weeks in the clinic and attends about 10 one-hour lectures.

Dermatology and Histology

Department head: Robert G. Cerney

Dermatology is the study of the skin and its appendages, and the diseases that affect them. The dermatologist is concerned with the diagnosis and treatment of disorders of the skin, hair, nails, and related structures. Dermatologists also play a role in the care of patients with systemic diseases that affect the skin. The field of dermatology is one of the fastest growing in medicine, and there is a growing demand for dermatologists. Dermatologists are trained in the diagnosis and treatment of skin diseases, including acne, eczema, psoriasis, and skin cancers. They also perform procedures such as skin biopsies and laser treatments.

Anatomy

06:118 Endocrinology for Medical Students 2 hrs.
Same as Physiology and Biophysics 72:118 and Medicine Non-Departmental 50:118.
Family Practice

Department head: Robert S. Bariin

The family practice program was initiated in answer to the need for more primary-care physician in Iowa and throughout the nation. Appropriate coursework in the Department is included throughout the four-year M.D. program. The Department's 18 elective senior student gives opportunities for exposure to various Iowa communities through work in affiliated hospitals and community services, the Department's Outpatient, Williamsburg and University Hospitals 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 internafinal health care elective offers exposure to primary health care systems of other countries.

Residency

The Department directs a three-year residency program, graduate 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 concept wherein the patient, allied health professionals and the physicians 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 interest and needs; it includes a broad spectrum of specialties in internal medicine, pediatrics, obstetrics and gynecology, psychiatry, neurology, surgery, and surgical subspecialties and community medicine. The program currently offers 72 positions for residents.

The hospital-based clinical experience is a unique combination 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 opportunity for total participation in the practice—both inpatient and outpatient—of the private physician staff. Rotations are specifically designed to provide breadth of experience, and in the second and third years exposure is available at Broadlawns Polk County, Iowa Lutheran and Blank Memorial hospitals in Des Moines, St. Joseph Mercy Hospital in Mason City, the Muscatine Community Health Center and the Red Oak Family Care Center and selected teaching practices.

Special Facilities

The Department office is located in Children's Hospital in the University Hospitals Complex and is the center of Department activities. It contains faculty offices, the University Hospitals Family Practice Office and an inpatient unit. The Department also maintains Family Practice Offices at the University's Oakland Campus, four miles to the northwest, and at Williamsburg, 75 miles west of Iowa City. The Williamsburg office is the only medical office in that community. In all offices, patient families are assigned to a resident with faculty supervision and are seen by appointment. Responsibility remains with that resident for the period he or she is in the training program. Emphasis is placed on teaching the principles of practice management, including organizational and administrative decision making, patient record and bookkeeping procedures and chart auditing methods as required to manage a private practice.

Courses

113:201 Introduction to Family and Community Medicine 2 h.
113:601 Family Practice, Broadlawns arr.
113:602 Family Practice, Red Oak arr.
113:603 Family Practice, Oakland Campus arr.
113:604 Family Practice, Williamsburg arr.
113:605 Family Practice, Muscatine arr.
113:606 Family Practice, Des Moines arr.
113:607 Family Practice, Mason City arr.
113:608 Family Practice, Red Oak arr.
113:609 Family Practice, Bellevue arr.
113:610 Family Practice, LaCrosse arr.

Emphasis in exposure to primary health care delivery systems of other countries; serves as a means by which student training can be broadened; available to Great Britain, Israel, Sweden, and other countries. Students who have participated in the program have demonstrated increased appreciation of diverse medical cultures and procedures and increased sensitivity to social and economic factors which influence health care. Medical students who have participated in this program have commented that they have been able to increase their ability to communicate with people from diverse medical cultures and that they have increased their understanding of racial, class, and cultural conflicts.
and 2 weeks prior to beginning of the rotation. After 4 minimum of 4 weeks to complete the rotation.

116-900 Special Studies Off Campus
Students who are enrolled in a faculty or 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 3 s.h.
Fundamentals of the Modern Hospital 3 s.h.
Health Economics* 3 s.h.
Statistics 3 s.h.
Human Resources Management* 3 s.h.
Second Semester
Fundamentals of Modern Hospital and Health Administration 3 s.h.
Principles of Hospital and Health Administration 3 s.h.
Financial Management 3 s.h.
Medical Sociology* 3 s.h.
Management Information Systems* 3 s.h.

Second Year
First Semester
Advanced Hospital and Health Organization and Management 3 s.h.
Clinical Education in Hospital and Health Administration
Thesis 3 s.h.
Issues in Health Planning* 3 s.h.
Operations Research in Business 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.
(*interdepartmental courses)

This is only one of many possible program sequences. Individual programs are determined by the student and his or her advisor, taking into consideration the student's educational background, present opportunities, and 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, 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 manpower studies and related projects. In addition 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. (Note: Student entry into the Ph.D. program is temporarily suspended.)

Courses

80:101 Fundamentals of the Modern Hospital

80:102 Fundamentals of Modern Hospital and Health Administration

80:103 Principles of Hospital and Health Administration

80:105 Administrative Aspects of Medicine

80:106 Administrative Aspects of Medicine

80:107 Seminar: Problems of Administrative Behavior in the Modern Health Organization

Human Nutrition

Administrator and chairman, Nutrition Advisory Committee: Thomas A. Adamson.

Graduate Program

The graduate program in human nutrition is administered by the Nutrition Advisory Committee, with members appointed jointly by the College of Medicine and the Graduate College.

The Dietetic Internship

The dietetic internship prepares the student for membership in the American Dietetic Association. Applicants to the internship program must meet the requirements of the American Dietetic Association and the Graduate College.

The intern earns graduate credit in nutrition seminar, clinical nutrition and hospital dietary administration.

University Hospitals pay interns a stipend which partially covers educational and living expenses.

The Dietary Department of University Hospitals issues a certificate to graduates of the dietetic internship program.

Courses

80:201 Nutrition Seminar

80:202 Nutrition Seminar
6:302 Nutrition Seminar 1 a.h.
6:303 Clinical Nutrition 3 a.h.
Internal Medicine
Nutritional aspects of disease and illness, emphasizing therapeutic use of food, principles of nutrition in all disease states, nutrition in pregnancy, lactation, demonstration,Tokens, nutrition in disease, nutrition in special populations.
6:304 Clinical Support Seminar 3-4 a.h.
Continuation of 6:303, but may be taken as an independent unit.
6:305 Projects in Nutrition arc.
Administration, research, epidemiology, food science, management studies: studies in research.
6:306 Interns in Nutrition arc.
6:307 Nutrition Research arc.
Research project in epidemiology, nutrition therapy, epidemiology, food science, and management.
6:308 Nutrition Research arc.
6:309 Hospital Dietary Administration 2-4 a.h.
Lectures and discussion of administrative techniques and methods for management planning, cost control, data processing and food systems.
6:310 Hospital Dietary Administration 2-4 a.h.
6:311 Hospital Dietary Administration 2-4 a.h.
6:312 Hospital Dietary Administration 2-4 a.h.
Continuation of 6:309, but may be taken as an independent unit.
6:311 Nutrition of the Child 2 a.h.
Lectures in nutrition of infant, child and adolescent, as seen in North America and developing countries.
6:325 Comparative Nutrition 2 a.h.
Modern patterns in world nutrition.
6:316 Analysis of Food Service Systems 2 a.h.
Review and evaluation of methods and equipment as values food service operations.

The Department of Internal Medicine is concerned with the diagnosis, prevention and treatment of diseases of adults. All facets of internal medicine are covered in the educational, patient care and research activities of the Department. These include general internal medicine and primary care as well as the specialized areas of allergy-immunology, cardiology, clinical pharmacology, endocrinology, gastroenterology, hematology, infectious diseases, renal and hypertension diseases and rheumatology.

The Department is organized into divisions in order to carry out these myriad functions.

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 examination and plan a rational approach to 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 six-year 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. Post-doctoral fellows who have completed their medical degrees are also accepted for programs in which the major focus is laboratory research.

Facilities

Teaching cources on the medical services and in the laboratories of the University hospitals in Iowa City, the Veterans Administration hospitals in Iowa City and Des Moines, and Iowa Methodist Hospital in Des Moines.

Courses

67-004 Cardiovascular Research and Special Study arc.
Independent research study in basic research; introduction to problems of experimental design and execution of data collection and analysis in biological systems. Open to M.D. students with background in methods and physiology. Physiology prerequisite.
67-100 Internal Medicine Elective for Physician's Assistant Students arc.
Elective for Physician's Assistant students.
67-101 Clinical Internal Medicine 9 a.h.
67-115 Interviewing Techniques 1 a.h.
67-119 ECG for Physician's Assistant 1 a.h.
67-160 Advanced Cardiovascular Research and Special Study arc.
Special studies for research projects requiring special knowledge of mammalogy. Data models or mammalogy; students assigned to investigators' work in progress. For graduate students. Prerequisite: approval of program.
67-201 General Medicine Diagnostic Clinic arc.
Assignment for five days a week in general diagnostic clinic; clinical evaluation of medical problems; emphasis on diagnosis and management of common medical problems presented in interest in practice, as well as early outpatients in management of serious disease, progress of patients, and communication to large hospitals.
67-202 Medicine Consultation Service arc.
Emphasis on development of ability to assess and recommend medical therapy for hospitalized and outpatients in general medical role.
67-203 General Medicine Ward Elective arc.
Clinical Allergic Immunology arc.
Experience in diagnosis and treatment of problems in allergy and immunology emphasized. Requirements and instruction evaluated by student under staff supervision; participation in interpretation of special studies carried out in allergy laboratory; subsequent correlation with specific clinical problems.
67-205 Survey of Immunology 3 a.h.
Lectures, readings and research in basic principles of immunology and immunopathology.
70165 Research in Allergy Immunology.

70166 Research in Clinical Cardiology.

70167 Development of new cardiac catheterization procedures for clinical purposes.

70168 Clinical Cardiac Catheterization Laboratory.

70169 Working up patients scheduled for cardiac catheterization.

70167 Electrocardiography.

70169 Information on electrocardiography and its applications.

70167 Laboratory.

70169 Work on medical services under supervision of specialists in cardiac and pulmonary disease.

70167 Coronary Care Unit.

70169 Work on the coronary care unit.

70167 Clinical Pharmacology.

70169 Studies of effects of drugs on the cardiovascular system in drugs in humans.

70167 Clinical Endocrinology.

70169 Participation in clinical studies of drugs and hormones.

70167 Clinical Endocrinology Veterans Administration Hospital.

70169 Research.

70167 Internal Medicine.

70169 Research on...
Microbiology

79:605 Clinical Liver Disease
79:606 Research in Renal, Hypertension and Electrolyte Disorders

Clinical: extremely laboratory investigations focusing on renal physiology; individual participants are engaging research involving large-scale and small-scale studies, utilizing clinical clearance methodology for studying aspects of sodium metabolism and influence of drugs therapy.

79:700 Clinical Rheumatology

Clinical: focuses on various rheumatic diseases, their differential diagnosis and principles of management; patients seen from arthritis clinic, outpatient consultation service of University Hospital and the Veterans Hospital.

79:801 Office Practice of Internal Medicine

Work with internists who are members of the Internal Medicine Society of Internal Medicine; clinical rotation and perform physical examinations with, in addition, a thorough study of proper course of diagnosis and management; focus on office practice of internal medicine; possible rounds with the hospital physician.

79:902 General Medicine; Guntherman Clinic, LaCrosse, Wisconsin

79:903 Marshfield Clinic

79:910 Inpatient Ward Services: Des Moines VA Hospital

79:915 Inpatient Services: Iowa Methodist

79:960 Special Studies on Campus

79:989 Special Studies off Campus

Individually arranged by student with approval of Department.

Medical Technology

See "Pathology."

Microbiology

Chairman: J. H. Peter

Faculty: professor John Carle, Jr., Louis G. Hoffman, Allen J. Matterson, J. R. Peter, Erik W. Sellin, associate professor George L. Bilder, John S. Beeler, Thomas L. Poppas (Linguistics), Stephen P. Galand (Chemistry and Microbiology), William Johnson, Robert L. Kricharew, Joe G. Halstead, Oswald P. Embly, Donald N. Walker; assistant professor Charles D. Ge, Nino A. Crocc, Michael G. Fisch, David M. Luckett (Linguistics), Mark J. Scudder

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

Undergraduate Program

See "College of Liberal Arts."

Graduate Degrees

The objectives of the graduate program are to help students become highly qualified in research and in the teaching of microbiology. These six areas are included in the program: pathogenic bacteriology, microbial genetics, immunology, microbial physiology, medical mycology and animal 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 candidates for a Ph.D. degree, but a few students desiring a terminal M.S. degree may be accepted. Students working for the Ph.D. degree may obtain an M.S. degree during their graduate work, at the discretion of the faculty toward the Ph.D.

All students admitted as candidates for advanced degrees are expected to assist in teaching in the Department during their course of study.

Incoming students choose 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 some opportunity for students to avail themselves of the University's diverse course offerings, seminars and research programs. For example, courses and seminars in clinical laboratory microbiology, genetics, cellular and molecular biology, and electron microscopy are taught on an interdepartmental basis.

M.S. Program

The course requirements for the M.S. student are the same as those for the Ph.D. program. A thesis based on the student's original 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 requirement: one course in each of four of the six subdisciplines 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 Basic Sciences Building together with the departments of Anatomy, Biochemistry, Pharmacology, Physiology and Biophysics. Adequate space and excellent equipment are available for teaching and research.

Graduate Admission

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 a 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 without the above coursework must take it during the first year of graduate school. The student should have a grade-point average of 3.7 or better to be admitted to the graduate program in microbiology.

Courses

61:100 Microbiological Medical Microbiology

Principles and methods essential to study of microorganisms, their isolation and identification; microorganisms involved in infectious diseases; clinical epidemiological principles and current concept of zoonoses. Prerequisites: registration in College of Medicine.

61:104 Microbiology Elective

For fourth-year medical students wishing to take additional coursework or research in medical microbiology, medical mycology, mycology or in other areas of discipline.

61:110 Microbiology for Physician's Assistant Students

Introduction to course in medical microbiology with emphasis given to the more commonly encountered pathogens, microorganisms and parasites useful to a physician's office. Prerequisites: registration as physician's assistant.

61:147 Survey of Immunology

Introduction to survey of fundamentals of cellular and molecular immunology and application to clinical problems; appreciation of field as whole; exposure to faculty from the department of Microbiology, Immunology, and Pediatrics, University of Iowa, and other departments. Prerequisites: an introductory course in microbiology or biochemistry, or consent of course coordinator. Same as 75:251.

61:157 General Microbiology

Principles of microorganisms, characteristics, growth, physiology, biochemistry, genetics, epidemiology and pathogenesis. Includes methods used for identifying and characterizing microorganisms. Companion: Chemistry 4152.

61:165 Bacteriology

Dissociation of pathogenic bacteria with emphasis on mechanisms of pathogenicity and
Nuclear Medicine Technology

Director: James K. Cyrus

Program coordinator: Grace A. Larsem

Faculty: professor Johns, R. Christlieb, Richard E. Penner; associate professor Frank R. Chang; instructor Grace A. Larsem; clinical instructors Robert L. Lakner; Mary Reiner

Degree offered: B.S.

Nuclear medicine technology is the portion of the allied health professions field which encompasses the techniques of using radioisotopes in medicine. New techniques for studying body processes and imaging organs and disease sites have generated the demand for technologists in this field. The student is trained in the use of the full range of the more than 150 radioisotopes currently available, beginning with the identification of the isotopic compound, its synthesis, and the preparation or purchase of the radioisotope. The student will also receive training in the use of a variety of instruments for the detection, counting, and analysis of radiation, including the gamma camera, and the identification and measurement of radiation levels in materials, radiation sources, and equipment. The student will acquire the scientific background necessary for performing research in the field, the ability to provide education to patients about the nature of the diagnostic or therapeutic imaging, and the ability to make appropriate clinical observations on the results of their diagnostic procedures.

Program content: The nuclear medicine technology program is designed to prepare students for employment in the field of nuclear medicine technology. The program includes courses in nuclear physics, radiobiology, radiopharmacy, radiobiology, radiopharmacology, radiation safety, radiological physics, radiological engineering, radiological instrumentation, and radiological procedures. The program also includes laboratory experiences in the use of radiation detectors, the measurement of radiation dosimetry, and the evaluation of radiation hazards.

Admission: Prospective students in nuclear medicine technology are encouraged to apply for study and to provide a transcript of previous work as early as possible in the preclinical program, since the class time is at present limited to six students. Prospective students must have had a high school diploma or equivalent. The student must also have a minimum of 2 years of full-time work experience in a health care setting. The student must also have completed a 2-year associate degree in a health science program, or have completed 60 quarter hours of college coursework, including 24 quarter hours in the sciences.

Nuclear Science and Technology

Committee chair: James O. Ostheimer

Faculty: William P. Braswell (Chemistry), Richard R. Ewing (Physics), James O. Ostheimer (Engineering), J. M. Trotman ( Materials Engineering), Arthur F. Best (Materials Engineering)

Research Laboratory: N.S. T. 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 radiation sources, and the use of irradiation devices.

Prerequisites: A student who has not taken the following courses, or their equivalents, before entering the program must take them during the program, without credit toward the M.S. degree:

22M:28 Calculus III
22:2 College Physics
4:4 Principles of Chemistry II
520:16 Thermodynamics I
or
562:42 Chemical Engineering Thermodynamics

Program Requirements
The Master of Science degree in nuclear science and technology requires 56 semester hours of credit with thesis, 38 without thesis. The program is intended to be flexible while conforming as nearly as possible to the following:

Nuclear Physics
6 s.h.
Recommended: 29:191-192 Atomic Physics I-Nuclear Physics

Nuclear technology
6 s.h.
Recommended: 562:150 Introduction to Nuclear Science and Engineering; 528:147 Nuclear Reactor Heat Extraction; and 562:156 Process Dynamics

Chemistry
3 s.h.
Recommended: 4:170 Advanced Inorganic Chemistry or 4:201 Special Topics in Inorganic Chemistry

Mathematics
6 s.h.

Radiation biology
4 s.h.
Recommended: 77:103 Introductory Radiobiology (biologists only); or 77:106 Environmental Radiological Health Physics

Electives
11 s.h.
Advanced courses in chemistry, physics, mathematics, engineering, radiation biology, computers

Total (without thesis)
38 s.h.

Admission
To enter the program, a student must have a B.S. degree in engineering, chemistry, physics, mathematics or general science and must satisfy the admission requirements of the Graduate College.

Obstetrics and Gynecology

Courswork for M.D. Students
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, laboratory, and outpatient assignments, ward rounds, teaching seminars, and special elective courses.

The third-year clerkship (664-4 Clinical Obstetrics and Gynecology) gives the students care 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, lavished to train the students in the skills of obstetrics and gynecology in a private hospital setting or in a multispecialty clinic. These electives include rotations at Broadlawns Polyclinic Hospital, Des Moines; Ochter Clinic and Conway Maternity Hospital, Monroe, Louisiana; Medical Associates, Dubuque; Methodist Hospital, Des Moines; and The Gunderson Clinic, LaCrosse, Wisconsin.

Residency Program
The Department offers a four-year residency. After passing a written and oral examination, graduates are eligible to be certified as specialists by the American Board of Obstetrics and Gynecology.

During the fourth year, the resident rotates through the various divisions of the Department and gains for both hospital in-patients and out-patients. Additional training is obtained in private clinics and in Waverly, Center Rapids and Davenport. During the final year, the resident spends time at Methodist and Broadawee Hospitals in Des Moines and at St. Luke's Hospital in Davenport.

In the fourth year rotation, the resident is trained in normal and abnormal obstetrics, advanced gynecologic surgery, office gynecology, endocrinology, oncology, family planning and contraceptive procedures. Advanced specialty training after the completion of the residency is available in endocrinology and oncology.

Fellowship Program
Gynecologic Oncology
The Department offers a two-year fellowship in gynecologic oncology. This involves clinical and research activities. After passing the written and oral examinations, fellows are eligible to be certified by the American Board of Obstetrics and Gynecology for Special Competence in Gynecologic Oncology.

Endocrinology
The Department offers a two-year fellowship in endocrinology. This involves clinical and research activities. Fellows are eligible, after passing the written and oral examinations, to be certified by the American Board of Obstetrics and Gynecology for Special Competence in Endocrinology.
Courses

68.1 Clinical Obstetrics and Gynecology
- 6 a.h.
Chapard is designed to prepare each student to function in special health tasks and physical examinations of patients and to gynecologic patient, as well as in courses of diagnostic techniques and therapy. Special relation to related gynaecology, family planning and techniques for early diagnosis of gynecologic cancer. The instruction in reproductive gynecologic medicine and psychological aspects of pregnancy and delivery must be a part of students' training and delivery and selected gynecologic problems presented.

68.2 Advanced Obstetrics and Gynecology
- Iowa City
- 6 a.h.
Students who are in the Obstetrics and Gynecology program must complete this course in the third year. Special emphasis on gynecologic problems (e.g. menorrhagia, obesity, weight loss, menopause, etc.) of which may be performed by student. One student, four weeks. Offered at least once a year.

68.3 Advanced Obstetrics and Gynecology
- Iowa Methodist Hospital, Des Moines, Iowa
- 6 a.h.
Students who are in the Obstetrics and Gynecology program must complete this course in the third year. Emphasis on gynecologic problems (e.g. menorrhagia, obesity, weight loss, menopause, etc.) of which may be performed by student. One student, four weeks. Offered at least once a year.

68.4 Advanced Obstetrics and Gynecology
- 6 a.h.

68.5 Gynecologic Endoscopy (Clinical)
- 6 a.h.

68.6 Advanced Gynecology (Research)
- 6 a.h.

68.17 Advanced Obstetrics and Gynecology
- 6 a.h.

68.18 Advanced Obstetrics and Gynecology
- Iowa Methodist Hospital, Des Moines, Iowa
- 6 a.h.

68.19 Advanced Obstetrics and Gynecology
- Terwilliger Hospital, Des Moines, Iowa
- 6 a.h.

68.20 Advanced Obstetrics and Gynecology
- Des Moines, Iowa
- 6 a.h.

68.21 Advanced Obstetrics and Gynecology
- 6 a.h.

68.25 Obstetrics and Gynecology
- 6 a.h.

68.26 Obstetrics and Gynecology
- 6 a.h.

68.27 Obstetrics and Gynecology
- 6 a.h.

68.28 Obstetrics and Gynecology
- 6 a.h.

68.29 Obstetrics and Gynecology
- 6 a.h.

Ophthalmology

Department head: Frederick J. Bliss
- 6 a.h.

68.110 Ophthalmology and Physiology: Physician's Assistant Elective
- 6 a.h.

68.117 Survey Elective
- 6 a.h.

68.119 Special Studies on Campus
- 6 a.h.

68.120 Special Studies off Campus
- 6 a.h.

Ophthalmology

Ophthalmology is a clinical and surgical specialty concerned with research, diagnosis and treatment of diseases of the eye and its adnexa, including correction of refractive errors.

Several subspecialties are represented in the Department: ocular physiology and pathology, pediatric ophthalmology, retinal disorders, glaucoma, neuro-ophthalmology, cornea and external diseases, oculoplastics, adult systemic diseases, and special surgical and medical ophthalmic photography.

The teaching program is directed toward the training of medical students and residents-in-training. The educational emphasis is placed on the development of methods for diagnosis and treatment. The residency program lasts three and a half years.

The residency program culminates in certification for the examination of the American Board of Ophthalmology.

The Master of Science degree is not offered as a primary professional objective but can be pursued in conjunction with a residency program only.

The Department maintains several research laboratories: tumor diagnosis, pathology and electron microscopy, electron microscopy, microbiology, papillation and vascular diseases. Clinical facilities are available not only at the University Hospital, but also at the VA hospital in Iowa City and in Des Moines. The Department also runs an eye clinic at the Broadview Polk County Hospital. The Department sponsors biennially an international symposium, annually a national conference and monthly a state-wide program of continuing education.

Two features of the program are outstanding: a large full-time faculty, and the opportunity to prepare for a career in teaching and research in ophthalmology.

Courses

67.110 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.111 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.113 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.114 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.115 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.116 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.117 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.118 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.119 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.120 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.121 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.122 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.123 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.124 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.125 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.126 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.127 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.128 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.129 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.130 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.131 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.132 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.133 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.134 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.135 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.136 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.137 Elective in Ocular Pathology and Physiology
- 6 a.h.

67.138 Elective in Ocular Pathology and Physiology
- 6 a.h.
participate simultaneously in inpatient care, outpatient care, surgery and sciences related to the nervous-sensory system, and a five or six-year program for those interested in full-time academic orthopedic careers.

The Clinical Program
Trainees enter this program through the National Internship Matching Plan directly out of medical school. This program consists of a one-year categorical diversified orthopaedic internship and four years in orthopaedic residency.

During the internship year, the trainee gains experience not only in clinical orthopedics, but in medicine, pediatrics, urology, surgical specialties, intensive care and anesthesiology.

During the following years, residents gain experience in trauma, children’s orthopedics, adult orthopaedics, musculoskeletal disorders, rehabilitation, prosthetics and orthotics, rheumatology and basic science as related to orthopedics. The residents take specialized courses in anatomy, bone histology, biochemistry, physiology and pathology.

A weekly seminar covers biomechanics, kinetics and selected clinical subjects. Residents also attend the Northwestern University courses on lower extremity impotence and prosthetics.

Program for Full Time Academic Orthopedics
This program involves the usual training described under the clinical program above. In addition to this, the resident devotes one or two years to research. This research may be in any field in which the resident is interested provided it is related to the musculoskeletal system. This research may be done in one of the five orthopedic laboratories or in a basic science department.

Departmental Laboratories
The orthopedic laboratories deal with problems in these major subject areas:

- **Biochemistry:** The biochemistry of mucopolysaccharides and collagen, both normal and those altered in epithelial dysplasias and scoliosis.
- **Biomechanics:** In conjunction with the College of Engineering, biomechanical problems of the upper extremity and bio-mechanics of the hip and the foot, and total joint replacement.

**Cate-biology and pathology—Ultrasound:11 studies on normal bone, cartilage, tendons and muscles, and on those altered by experiment and disease.**

Tissue transplants, radioactive tracers and metabolic bone disease—Skin, bone and cartilage exploitation and various aspects of mineral composition and bone density in metabolic bone disease.

Facilities
The Department is housed in Children’s Hospital, and has an active service in the nearby Iowa City Veterans Administration Hospital.

It consists of 120 beds, an outpatient clinic, a specialty library, a specialty radiology unit, a brace shop and physical therapy facilties.

Physicians in the outpatient clinic see approximately 100 patients a day.

**Specialty clinics deal with such problems as scoliosis, club feet, congenital dislocated hips, neurovascular disease, musculoskeletal disease, amputees, hips, knees, hands, reoperations and trauma.**

Approximately 1,500 major operations are performed each year under supervision of the Department.

The Department provides consulting service to the Hospital School for Handicapped Children, Stave Services for Crippled Children and two state schools for the mentally retarded.

**Courses**

- **76/5 Clinical Orthopaedics**
- **76/121 Fundamentals of Orthopaedics**
- **76/108 Orthopaedics for Physicist’s Assistant Students**
- **76/201 Advanced Clinical Orthopaedics**
- **76/202 Biochemical Trauma**
- **76/203 Peripheral Trauma**
- **76/205 Surgery of the Hand**
- **76/206 Hand**
- **76/205 Orthopedics**
- **76/206 Trauma**
- **2 n.h.**

Review of normal and pathological studies for graduate work in medicine and physical education.

**76/219 Laboratory Experience**

- **76/219 Special Studies on Campus**
- **76/219 Special Studies off-Campus**

Open to medical students only.

**Otolaryngology and Maxillofacial Surgery**

**Department head:** Brian P. McCull

**Professor:** Harold H. Benoir, Charles Ezra, Charles Ewass, Brian McCull


**Assistant Professor:** World Portrait, Robert K. Stuart, Mark E. Jelinek, E. J. Jelinek, R. E. Jelinek

**Degree offered:** M.S.

The Department provides one of the oldest and largest otolaryngology and maxillofacial surgery training programs in the world.

Currently there is a full-time faculty of 20, including several members from the radiology, dentistry and speech pathology professions.

The Department’s main objective is to provide a high-level instructional program in otolaryngology and maxillofacial surgery for medical students and residents. To maintain a broad and in-depth teaching program, a large patient load is borne by the Department’s faculty and staff in these clinical areas: head and neck oncology; maxillofacial trauma; craniofacial defects; children’s ENT disease; disorders of the middle ear; otologic disease; facial plastic surgery; pediatric and genitourinary problems; voice problems; general endoscopy; surgery of deafness; and all the areas usually considered otolaryngology.

In addition to the major otolaryngology and maxillofacial medical-surgical service, there are four other divisions in the Department which make this program comprehensive: facial plastic surgery, craniofacial defect, speech and hearing, and research.

Another major objective of the Department is to foster research programs designed to help new knowledge in the field and provide models for student and resident research training. All basic facilities members participate in research and all residents are required, as part of the resident training program, to
Graduate Course in Otologyngology
The program in otologyngology is in accordance with the requirements of the American Board of Otologyngology. The program consists of a four-year course of basic and clinical science. The basic science group consists of a series of didactic lecture and laboratory studies preparatory to actual clinical work. It is conducted during the first three and one-half months of residence, 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 supervised clinical and operative work. Clinical conferences and seminars pertinent to the practice of otologyngology and its related fields. The successful completion of the four-year course, which must include an acceptable thesis, qualifies the student for the M.D. 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 withstanding work. A limited number of resident physicians can be accepted each year. Applicants must be graduates of a recognized school. A medical school and must have completed one year of general surgical training in an approved program.

Courses
68:3 Clinical Otologyngology 2 a.h.
68:100 Clinical Internship in Otologyngology 2 a.h.
68:101 Head and Neck Oncology 2 a.h.
68:102 Otologyng Course 2 a.h.
68:103 Principles of Physiotherapy 2 a.h.

68:109 Basic Otologyngological Sciences
Special reference to head and neck, upper gastrointestinal tract, musculo-skeletal system and related branches, including burns as diagnostic and pelvic surgery. Of necessity, anatomy, histology, embryology, physiology, hematology, physiology, histology, and surgery; pathology and otologyngology; physiology, scientific method (research and experimental methodology, design of experiments and statistics); laboratory techniques; histology; the fine structure of cell, tissue, and nervous system; and clinical aspects of otologyngology. Lab 2 a.h.

68:203 Research in Otologyngology
Laboratory course designed for students with special research interest. Exercise in research, including interpretation of research literature, practical applications of knowledge to other research areas, and statistical techniques. Of special interest to otologyngology, neurology, and ophthalmology. Lab 2 a.h.

68:210 Clinical Conference in Otologyngology, Neurology, and Manife-sta-tion of the Ear
Presentation of diagnostic methods and outlines of management of assigned patients. Lab 2 a.h.

68:311 Clinical Otologyngology, Rhinology and Manife-sta-tion of the Ear
Diagnosis and treatment of patients in areas of rhinology, otologyngology, and manife-sta-tion of the ear. Lab 2 a.h.
to certification in anatomic and clinical pathology by the American Board of Pathology. A postdoctoral training program in clinical chemistry is also offered.

Undergraduate Programs
The Medical Technology Program at Iowa is sponsored through the cooperation of the College of Medicine, College of Liberal Arts, University of Iowa Hospitals and Clinics, and the Iowa City Veterans Administration Hospital. The program is approved by the Council on Medical Education of the American Medical Association and by the National Accrediting Agency for Clinical Laboratory Sciences. Satisfactory completion of the program qualifies the student for the Board of Registry of Medical Technologists registry exam for designation as a Medical Technologist (American Society of Clinical Pathologists).

A new class is admitted each July and January. Students may enter the program either following their junior year of college or after having earned a baccalaureate 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 from The University of Iowa by successfully completing the Medical Technology Program. Undergraduate students who complete their pre-clinical year 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 pre-clinical year studies to meet the requirements of the Medical Technology Program.

To be considered for admission the applicant should have completed 54 semester hours of college study including general chemistry, qualitative analysis, organic chemistry and quantitative analysis (16 s.h.), general zoology, microbiology, parasitology (16 s.h.), mathematics (5 s.h.). Course work in general physics, human physiology, biostatistics and biochemistry, and genetics is strongly recommended. A cumulative grade-point of 2.0 (A=4). A 3.5 minimum grade-point average is highly recommended. Admission to the clinical year program is on a competitive basis. Applications must be received by December 31 of the year preceding admission.

The clinical year program consists of 12 consecutive months of didactic and practical instruction.

The clinical year consists of 30 units of activity distributed between both the academic professional curriculum and clinical laboratory rotation. The academic professional curriculum (15 units) consists of lectures in clinical laboratory core courses which include: lecture, student laboratory experiences, and seminars. During the last six months of the clinical program, the student rotates throughout the clinical laboratory facilities of both University of Iowa Hospitals and Clinics and the Iowa City Veterans Administration Hospital, and has additional lectures. Total hospital bed capacity of the Medical Center is 1,100 and clinical laboratories test approximately 2.5 million tests per year. The remaining 15 units are clinical rotations which give students additional exposure and clinical experience to implement the theory and techniques previously acquired through the Program in the teaching laboratories.

Because the University of Iowa clinical program is limited to 32 students, a student completing preclinical science studies at Iowa may satisfy degree requirements by completing clinical studies in another approved hospital medical technology program, with prior written approval from the University's College of Liberal Arts.

Graduate Program
The graduate program is sufficiently flexible to accommodate students with varied backgrounds. Students with B.S. degree in chemistry, biochemistry, biology, zoology and medical technology, as well as medical and dental degrees, are encouraged to apply.

In addition to Graduate College requirements the Pathology Department requires: 30 total units in science core and a combined, verbal and quantitative GRE score above 1200. A personal interview is required before final acceptance into the program. All programs involve components of wetting, patient care and research. These activities are structured in the teaching programs of the Department, the service laboratories of the Department and the University Hospitals, and the research laboratories of selected faculty members. All degree requires a thesis.

Although the M.S. program is flexible and open to students with varied backgrounds, two structured degree programs have been emphasized. Medical or dental students may take a leave from their professional school programs to pursue graduate training in pathology. Medical technologists may advance their training, usually by subspecialization in laboratory medicine and with a M.S. in pathology.

Special Programs
The Department is approved for 16 training positions in pathology, covering a training span of up 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, cytology, clinical biochemistry, medical microbiology, hematology and blood bank. Adequate opportunity is afforded for concentrated study in such subspecialties as neuropsychiatric pathology, dermatopathology, and gastrointestinal pathology, as well as medical microbiology, clinical biochemistry, hematology and blood banking.

A postdoctoral training program in clinical biochemistry is offered. This program is approved by the American Board of Clinical Chemistry and is open to Ph.D. biochemists or chemists. In addition, a limited number of externships and clerkships are available to postdoctoral students.

Facilities
The Department has laboratories equipped for histopathology, histochemistry, electron microscopy, tissue culture, special chemistry, cytochemistry and blood coagulation, as well as the usual facilities for anatomic and clinical pathology. The currently remodeled Pathology Learning Center has areas for seminars, independent study, multimedia learning activities and small group discussions.

Courses
1. Introduction to Medical Technology 4 s.h.
2. Survey of Medical Technology 3 s.h.
3. Clinical laboratory technology 12 s.h.
4. Clinical laboratory technology and diagnostic techniques in anatomic and clinical pathology 12 s.h.
5. Medical technology and diagnostic techniques in anatomic and clinical pathology 12 s.h.
6. Advanced laboratory diagnostic techniques in anatomic and clinical pathology 12 s.h.

Medical technology and diagnostic techniques in anatomic and clinical pathology 12 s.h.

Offered fall and spring.
Pharmacology

Department head: J.P. Long

Degrees offered: M.S., Ph.D.

The Department is involved in the professional education of pharmacy, dental and medical students. A recognized graduate program with a full series of courses has been developed. More recently, the educational program has been expanded to include clinical pharmacology and clinical toxicology.

The Department pioneered the offering of pharmacology (171-120 Drugs: Their Nature, Action and Use) to undergraduate students with little or no science background. The lecture-discussion sessions emphasize the mechanisms of drug action and establish a background so rational decisions can be made by students.

Exhaustive research and teaching programs in the Department include biochemical pharmacology and toxicology, drug metabolism, central nervous system and autonomic pharmacology, and the pharmacology of the cardiovascular and renal systems. There are several significant interactions with other departments through the University’s NSF Biobehavioral Developments Planning Program in neurology and endocrinology, the Neurobehavioral Studies Program and the Cardiovascular Program Project of the Department of Medicine. A considerable portion of the Department consists of the Center for Biochemical Pharmacology and Toxicology. Research training in all areas of pharmacology and toxicology is available at the predoctoral and postdoctoral levels. This training is in preparation for the extensive career opportunities available in academic teaching and research in various institutional research laboratories and in industrial research.

Graduate Study

Prerequisites for graduate study include undergraduate background in chemistry, biology and mathematics, and a high level of past performance is expected of all applicants.

M.S. Program

In cooperation with clinical departments within the College of Medicine, a Master of Science degree program in clinical phar-
Physical Therapy

Program director: Gary L. Scull
Associate director: Gary L. Scull

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 and well-being of the individual, and they teach the patients, 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 support 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. Satisfaction 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 and Neuroanatomy 4 s.h.
101:115 Kinesiology 3 s.h.
101:131 Therapeutic Physical Agents 2 s.h.
101:141 Introduction to Physical Therapy 3 s.h.
69:203 Principles of Human Pathology 2 s.h.
63:161 Introduction to Biostatistics 1 s.h.

Semester II
60:110 Neurobiology and Behavior 4 s.h.
72:150 Intermediate Physiology 5 s.h.
101:110 Therapeutic Exercise I 2 s.h.
101:118 Clinical Observation 2 s.h.
101:122 Emotional Aspects of Disability 2 s.h.
101:190 Electrotherapy 2 s.h.

Semester III
101:101 Introduction to Clinical Medicine and Clinical Sciences 2 s.h.
101:102 Fundamentals of Orthopedics and Clinical Sciences 2 s.h.
101:111 Therapeutic Exercise II 4 s.h.
101:131 Principles of Neurology and Clinical Sciences 2 s.h.
101:119 Clinical Education and Rehabilitation 2 s.h.
101:103 Scientific Inquiry 1 s.h.
101:121 Physical Therapy Administration 1 s.h.
101:116 Radiology for Physical Therapists 2 s.h.

Semester IV
101:120 Clinical Internship 2 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 baccalaureate 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 84 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 3.0 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
nicians, public health nurses, 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 at the University of Iowa Health Center. A major portion 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 science areas. Whenever appropriate, related subjects are integrated to provide sequential lectures, laboratory and clinical experience. A seminar course specifically directed to the behavioral sciences and analyses of health care systems is also offered during this session.

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. 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 may be 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 model health care clinics at Oakdale and Muscatine. 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 the basis of a service team. The program is integrated into the teaching of the College of Medicine, thus permitting a symbiosis to develop between various medical and health care professional students.

Professional Curriculum

First Year
71:125 Pharmacology for Health Sciences: Physician's Assistant 5 h.
50:105 Law and Medicine for Physician's Assistant Students 1 h.
66:111 Gross Human Anatomy for Physician's Assistant Students 6 h.
61:110 Microbiology for Physician's Assistant Students 2 h.
69:203 Principles of Human Pathology 5 h.
69:130 Clinical Pathology for Physician's Assistant Students 2 h.
72:164 Human Physiology for Physician's Assistant Students 4 h.
99:164 Biochemistry for Physician's Assistant Students 3 h.
50:121 Introduction to Clinical Medicine for Physician's Assistant Students 0.5 h.
117:101 Seminar for Physician's Assistant Students 0.5 h.

Second Year
Required clinical rotations:
70:555 Pediatrics for Physician's Assistant Students 6 h.
75:555 General Surgery for Physician's Assistant Students 6 h.
76:555 Internal Medicine for Physician's Assistant Students 6 h.
115:555 Family Practice for Physician's Assistant Students 6 h.

Elective clinical rotations: four to be selected from the following, to include, if available, the first two:
66:120 Obstetrics and Gynecology for Physician's Assistant Students 6 h.
73:100 Psychiatry for Physician's Assistant Students 3-6 h.
70:101 Child Health Care for Physician's Assistant Students arr.
70:102 Pediatric Elective for Physician's Assistant Students arr.
75:100 Emergency Room for Physician's Assistant Students arr.
76:102 Orthopedics for the Physician's Assistant Students arr.
115:300 Family Practice Elective for Physician's Assistant Students arr.
78:100 Internal Medicine Elective for Physician's Assistant Students arr.

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.

Expenditures
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 University-wide, a limited number of special tuition scholarships are available to students in the physician's assistant program, on the basis of need. These stipends will not be available after July 1977.

Admission
Requirements
To be eligible for admission to the physician's assistant program, the applicant must have completed 60 semester hours of college study, including:

• College of Liberal Arts general education requirements in rhet-

•
scopic, 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 an associate of arts or 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 in the last 60 academic hours of college coursework undertaken. The admissions committee gives special attention to the applicant's performance in science courses.

Satisfaction of the basic admission requirements does not ensure acceptance into the physician's assistant program. The admissions committee selects the applicants it considers best qualified. Applicants with previous health care experience involving direct patient contact receive preferential consideration. 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 January 15. In addition to completing the general University administration application procedures, the physician's assistant application should present a detailed description of the applicant's medical training and experience, and at least three letters of recommendation.

Course 117/119 Seminar for Physician's Assistant Students 0.5 a.h.

Lectures, readings and group meeting dealing with topics of specific interest to physical medicine and rehabilitation students that are not covered elsewhere in the program curriculum. Open only to students in the physician's assistant program.

Physiology and Biophysics

Department head: R.E. Fellers


Degrees offered: M.S., Ph.D.

The Department offers advanced study leading to the doctorate in physiology and expect to prepare for professional careers in basic and applied biomedical research and teaching. It also participates in the professional education of medical, dental, pharmacy, physical therapy, nursing and physician's assistant students.

Graduate Study

The Department does not narrowly prescribe the undergraduate background for advanced study although candidates are expected to have strong backgrounds in basic biological and quantitative sciences, including calculus, physical chemistry and physics. Its students generally have backgrounds in biology, chemistry, physics, mathematics or engineering.

With the help of an advisory committee, the student develops a plan of study suited to his or her particular background, needs and interests. Required courses are 72:212 Medical Physiology, 72:118 Endocrinology for Medical Students, 72:210 Neurobiology and Behavior. In addition, students take at least three advanced courses in physiology and biophysics, a course in organic chemistry, a course in physical chemistry, if this requirement has not been satisfied at the time of admission. The usual time sequence for completion of requirements for the doctoral degree includes two years of coursework, including the comprehensive examination, and at least two years of original research, including preparation of a dissertation and its defense in a final examination.

Faculty

Department members are active in many different areas of research. Current interests include cardiovascular physiology, membrane physiology, cellular and molecular endocrinology, neurophysiology, developmental physiology, respiratory physiology, renal physiology, gastroenterology, environmental physiology, exercise physiology, biophysics of excitation and contraction, biophysics of growth and biomechanical engineering.

Admission

In addition to the University's general graduate admission requirements (see the Graduate College section of the Catalog), a minimum requirement for admission to the graduate program in physiology include a 3.0 undergraduate grade-point average, two semesters and undergraduate coursework in life science subjects, a combined total of six semester in chemistry (through physical chemistry) and physics, and mathematics through calculus. An applicant deficient in the prerequisite coursework may be admitted if he or she can work out the deficiency during his or her first year in the graduate program.

Course 70:13 Introduction to Human Physiology 4 a.h.

Basic concepts of human physiology. Reproductive Zoology 70:31, Chemistry 47:7 or equivalent, one course of statistics.

70:13 Introduction to Biophysics 4 a.h.

Physical interpretation of biological observations, such topics as light, heat, biomechanics, and flow and diffusion in living systems discussed. Recommended prerequisite: one term of biology, and one semester of physics.

70:102 Electron Microscopy 4 a.h.

Basic concepts of electron microscopy and property of electron microscopy. 70:14, graduate standing and consent of instructor.

70:108 Neuroceology and Behavior

Introduction to the organization and function of nervous system. Serves as
physical, biological and sociological factors of the environment and the manner in which they influence the health of the individual or groups of individuals.

The teaching of preventive medicine and environmental health at Iowa began in 1895, when a course in sanitary science and public health was introduced. The present Department was established in 1921. Since its inception, the Department has continued to offer courses in many areas of preventive medicine and public health, including epidemiology and communicable disease control, institutional and food sanitation, industrial hygiene, biometry, health services research, comparative medicine, agricultural medicine, and many other areas related to the health of communities. Many graduates of the Department have gone on to national and international achievement in public health work.

In 1955 the Department sponsored the development of the Institute of Agricultural Medicine, the first in the western hemisphere dedicated to the study of the occupational health problems of the agricultural worker. The varied programs of the Institute provide practical training for students of the health professions as well as for medical students at the graduate and postgraduate levels, and reflect a special interest in our rural environment.

The Department has an expanded and comprehensive biostatistics program, which offers both graduate and undergraduate instruciton. Besides individual research in statistical methodology, extensive collaborative research is done with other departments, particularly in the College of Medicine. Departmental programs are enhanced through affiliations with the State Hygienic Laboratory, the University Environmental Health Service, Student Health Service, College of Engineering, the Health Services Research Center, and many regional health care delivery programs.

Medical epidemiology, which also is related to the clinical activities in the University Hospitals, is primarily oriented toward the community. Teaching and research are concerned with basic epidemiologic methods, but the emphasis is on application to community health problems. Areas of specific interest include the organization and delivery of health services, foundation health service description and control of both acute communicable and chronic diseases as well as clinical epidemiology. There is a special emphasis within the Department on the epidemiology of cardiovascular diseases and cancer.

Training of specific medical programs include assistance in the development of evaluation of new primary care health centers, conduct of a summer medical student primary care program for migrant farm workers, survey of health service utilization behavior in Iowa communities, cardiovascular disease and hyperlipidemia across generations, cancer epidemiology through the Iowa State Cancer Registry and the Iowa Cancer Epidemiology Research Center (both based within the Department), the epidemiology of clairvoyance associated with environmental factors, major participation in evaluation of health services research activities at a university-wide basis, the study of the health effects of pesticides, the study of agricultural worker accidents and trauma, and many others. Consultation on epidemiologic projects is given widely in diverse areas of research and applied clinical and community activities.

The master's programs carry a degree with an emphasis on environmental health, biometry, epidemiology, or a general track for those who are already health professionals. The Ph.D. program is available with an emphasis in epidemiology, biometry, environmental health, or health services research.

A limited amount of financial assistance is available within the department.

Admission
Application deadlines for the fall and spring sessions are April 1 and October 1, respectively. No entering students are accepted for the summer session.

Minimum GPA requirements are 2.7 for the Master's, 3.0 for the Ph.D. A minimum combined GRE score of 1050 is needed. Undergraduate major or course background required for graduate admission in science or mathematics, depending on graduate program of study. Without possible, a personal interview with the prospective applicant is desirable. Always required, however, are three letters of recommendation.

Courses
52 101 Health Science I 3.0 h.
Dynamics of health in normal cells and tissues of man, and many representatives by treatment effort of individuals and society.
52 102 Health Science II 3.0 h.
Health education in relation to potential and consequential effects of biological, chemical, physical and sociological factors of environmental health and life. Special recognition of given to food and water-borne diseases, chemical contaminations of environment, including pesticides, water, air pollutants, diseases from intakes treated to man, effects of population and urban and regional planning on health and disease.
52 199 Environmental Health Administration 3.0 h.
Principles of governmental and voluntary agencies directed at evaluation of environmental health problems and at planning for and delivering environmental health services; promotion and regulatory activities employed in environmental management, legal basis for such services.
52 190 Community Health 3.0 h.
Introduction to occupational health: preventive medicine, organizations and delivery of health services, environmental health and public health for professional students; emphasis on application of community and population studies in disease control and public health.
52 110 Biostatistics 1.0 h.
Survey of analytical methods for persons who have a brief introduction in general terminology and methodology. Topics include descriptive statistics, probability, biased and normal distributions, confidence intervals, test of hypotheses, mathematical application of the theory of probability.
52 120 Public Health Aspects of Food and Housing 4.0 h.
Health aspects of food production and services, including laboratory and field testing, fundamentals of judging and testing foods, their availability and availability. Enrollment limited to residence and institutional with the second half of the course.
52 100 Principles of Epidemiology 3.0 h.
Basic epidemiologic and the design and analysis of prospective and poperative studies. Conceptual and practical applications of methods of social science to human diseases.
52 112 Bacteriology 3.0 h.
Bacterial culture and isolation, different media, experimental, and internal control. Stains and colonial features, identification, sensitivity testing, the study of bacterial growth, and the study of bacteria.
52 122 Design and Analysis of Experiments in the Biomedical Sciences 3.0 h.
One-way layout, two-way layout. Consideration in the planning of experiments, sample spaces, design, randomization, and the experimental design. Enrollments, college facilities.
52 142 Introduction to the Design of Sampling Surveys 3.0 h.
Techniques of constructing and analyzing sample surveys, including general methods of estimation, properties of estimators, simple random sampling, stratified sampling, ratio and regression estimation, systematic sampling and subsampling or multi-stage sampling.
Preventive Medicine and Environmental Health

63:188 Introduction to Biological Assay 1 a, b

63:187 Biometrics and Biometry 3 a, b

63:188 Demographic Methods for Health Data 2 a, b

63:186 Analysis of Qualitative Biomedical Data 2 a, b

63:171 Problems in Preventive Medicine 3 a, b
63:172 Independent Study and Research in Preventive Medicine 3 a, b
63:173 Intermediate Design of Sample Surveys 2 a, b
63:174 Medical Care and Clinical Trials 2 a, b
63:175 Statistical Methods 4 a, b

63:188 Introduction to Biostatistics 4 a, b

63:186 Introduction to Health Services Organization and Delivery 2 a, b
63:188 Evaluation of Health Services 2 a, b

63:185 Environmental Health 2 a, b
63:187 Introduction to Preventive Medicine and Environmental Health 2 a, b

63:205 Epidemiological Applications in the Health Services 2 a, b
63:206 Rural Health 3 a, b
63:207 Rural Health 3 a, b
63:208 Rural Health 3 a, b
63:209 Rural Health 3 a, b

63:188 Introduction to Biological Assay 1 a, b

63:187 Biometrics and Biometry 3 a, b

63:188 Demographic Methods for Health Data 2 a, b

63:186 Analysis of Qualitative Biomedical Data 2 a, b

63:171 Problems in Preventive Medicine 3 a, b
63:172 Independent Study and Research in Preventive Medicine 3 a, b
63:173 Intermediate Design of Sample Surveys 2 a, b
63:174 Medical Care and Clinical Trials 2 a, b
63:175 Statistical Methods 4 a, b

63:188 Introduction to Biostatistics 4 a, b
Radiation Biology

Courses
75:100 Physiologist for Physician's Assistant Students arr.
75:121 Physiologic Elective for Physician's Assistant Students 1 s.h.
75:200 Physiology 1 s.h.
75:250 Research in Physiology arr.
75:301 Problems in Physiology arr.
75:350 Physiology Independent Study arr.
75:360 Physiology and Drug Abuse 3 s.h.
Lecture, readings, & discussions of the interaction between psychiatric conditions & drug abuse. Prerequisite: consent of instructor.

Courses open only to medical students
75:26 Clinical Pharmacy Senior Medical Students)
75:30 Modern State Hospital Psychiatry, Mental Health Institution, Indiana arr.
75:31 General Hospital Psychiatry arr.
Psychiatry Consultation Service, University Hospital and Clinic.
75:33 Adult Psychiatry, Psychopharmacology arr.
75:36 Hospital Psychiatry, VA Hospital, Iowa City arr.
75:38 CAMH Psychiatry, Psychopharmacology, Outpatient Services arr.
75:27 Emergency Room Psychiatry, Broadlawns Hospital, Des Moines 4-6 s.
75:48 Correctional Psychiatry, Iowa Security Medical Facility, Columbus arr.
75:54 Psychopharmacology in Community Psychiatry, Mental Health Centers in Iowa arr.
75:41 Innovative Community Psychiatry, Mental Health Center, Commerce City, Colorado arr.
75:47 Psychopharmacology in Neuropsychopharmacology arr.
75:48 Advanced Interdisciplinary in State Hospital Psychiatry arr.
75:60 Clinical Neuroelectrophysiology arr.
75:62 Hypnosis in Clinical Medicine 1 s.h.
75:61 Electroencephalography in Clinical Neurophysiology 1 s.h.
75:5900 Special Studies Off-Campus arr.
75:9800 Experimental Neurophysiology arr.
75:2800 Clinical Neurophysiology 3 s.h.
Lecture, readings & discussions of the interaction between psychiatric conditions & drug abuse. Prerequisite: consent of instructor.

Radiation Biology
Program director (pending): Jerry W. Osborne.
Degree offered: M.S., Ph.D. The mission of the program is to provide in-depth training and research experience in the study of the physical, chemical, and biological effects of radiation and the theory and widespread application of radioseparation methodology. The importance of these areas to scientific research, clinical medicine and to the general public is stressed.

Undergraduate Programs
There are no complete programs, but two courses, 77:103 Introductory Radiobiology and 77:105 Environmental and Radiological Health Physics, are open to students of liberal arts or professional colleges. They should be of interest to students 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 well as a minor field for students whose major interest is in another, but related, field. The Ph.D. program in radiation biology is open to graduate
students with a background of study in physics, chemistry, mathematics, biology, health sciences, veterinary medicine or engineering. Obviously, 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 completion of the introductory course, the student may emphasize a particular aspect of the field. The details of the program are built upon previous training, interests, abilities and career objectives. Some students elect to emphasize training in physical aspects, such as radiological physics or health physics. Others major in biological aspects. In either case, a broad base rather than complete specialization 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 tools 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 biological statistics or computer programming before taking the final examinations. Students will have at least one semester of experience as a teaching assistant and at least one as a research assistant.

Special Programs
Postdoctoral training is available by arrangement with the program chairman and individual faculty members.

Special Facilities
The Radiation Research Laboratory has an X-ray generator and other radiation sources. Students and staff members also have access to other radiation sources, such as the Co-60 gamma source in the Department of Radiation and in the reactor of the Biology Division at Argonne National Laboratory. The Radiation Research Laboratory has a variety of radiation detectors and counters, including a liquid scintillation counter 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, a gamma well counter, an automatic cell counter and particle size, an electron microscope and shadow caster, and facilities for preparing biological sections of tissues—fixed or frozen—and autoradiographs. Three air-conditioned rooms provide convenient housing for the small laboratory animals used in research and teaching.

Departmental Financial Aides
Graduate students are supported as research assistants when possible from funds available through research grants and contracts or as teaching assistants from departmental funds. Some awards are also available to graduate students and postdoctoral students through the U.S.P.H.S. Research Service Award program to support training in biomedical radiation research. Individual postdoctoral awards are also possible and are applied for jointly by a candidate and the faculty sponsor.

Courses
77:000 Introductory Radiology 4 hrs.
77:001 Introductory Radiation Biology 4 hrs.
77:010 Environmental and Radiological Health Physics 3 hrs.
77:027 Seminar: Research 1 hrs.
77:036 Seminar: Radiation Research 4 hrs.
77:101 Radiation Physics I 4 hrs.
77:211 Physics of Radiological Physics II 4 hrs.
77:213 Physics of Radiation Research 4 hrs.
77:217 Radiobiology 4 hrs.
77:218 Cellular Radiobiology 4 hrs.
77:220 Radiation and Cell Growth 4 hrs.
77:222 Radiology Research 4 hrs.
77:224 Radiobiology Research 4 hrs.
77:230 Research Methods in Radiobiology 4 hrs.
77:270 Research in Radiobiology 4 hrs.
77:280 Research in Radiobiology 4 hrs.
77:300 Research in Radiobiology 4 hrs.
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examination must be mailed to The University of Iowa. Applications must be made to the Director of Admissions, The University of Iowa. Personal interviews may be required. Applicants will be notified of 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 purpose of the Master of Arts degree program in physical therapy is to provide opportunities for advanced learning experiences in the research, teaching and clinical care areas. Biological, mechanical and psychological bases and associated applications to physical therapy (prevention, evaluation and treatment) are emphasized for movement disorders of the musculoskeletal, neuromuscular and cardio pulmonary areas. 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. A thesis is required.

### Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>101:301</td>
<td>Thesis Physical Therapy</td>
<td>6 s.h.</td>
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<tr>
<td>63:261</td>
<td>Introduction to Biostatistics</td>
<td>3 s.h.</td>
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<tr>
<td>72:102</td>
<td>Exercise Physiology</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>27:241</td>
<td>Scientific Principles of Physical Conditioning</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>101:213</td>
<td>Principles of Human Motion I</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>101:275</td>
<td>Evaluation of Neurological Disorders</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>101:326</td>
<td>Analysis of Scientific Literature</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

### Recommended Courses

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<tbody>
<tr>
<td>101:212</td>
<td>Medical Instrumentation</td>
<td>2 s.h.</td>
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<tr>
<td>69:303</td>
<td>Principles of Human Pathology</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>101:295</td>
<td>Electromyography in Kinesiology and Biomechanics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>71:161</td>
<td>Designing Learning Programs for Health Care Education</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>71:162</td>
<td>Learning Strategies for Career and Educational Counseling</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>77:248</td>
<td>Data Processing</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>77:150</td>
<td>Educational Measurement for the Classroom Teacher</td>
<td>2-3 s.h.</td>
</tr>
<tr>
<td>63:171</td>
<td>Problems in Preventive Medicine</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>27:257</td>
<td>Biomechanics of Human Motion</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>7V:05</td>
<td>Selection and Utilization of Educational Media</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>27:312</td>
<td>Selected Issues in Information Processing and in Motor Control</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31:123</td>
<td>Psychology of Learning</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>101:280</td>
<td>Practicum: Teaching Methods and Design</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>101:281</td>
<td>Teaching Practicum</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>101:290</td>
<td>Advanced Electrotherapy and Electrodiagnosis</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>101:325</td>
<td>Independent Study</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>101:327</td>
<td>Research in Therapeutics</td>
<td>2 s.h.</td>
</tr>
</tbody>
</table>

### Elective Courses

Students are encouraged to seek out appropriate elective courses.

### 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 licensure examination for physical therapists.

### Facilities

Perm-us associated with the program have access to the physical therapy and orthopedic/biomechanics laboratories, and to the biomechanics laboratory in the College of Engineering. These laboratories are equipped with instrumentation—computers, oscilloscopes, electromyographs, electromyographs, force plate, high-speed camera, motion analyzer, accelerometers and force table—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 collaborative studies of medical problems with orthopedics, engineering, cardiology, physiology, anatomy, pediatrics and otorhinolaryngology; the master’s degree program and the Physical Therapy Clinic interrelate in terms of conferences, teaching, patient care and research.

### Financial Support

The program strives to provide financial assistance for all full-time students.

### Doctor of Philosophy Program

The physical therapy program coordinates a Ph.D. program for physical therapists. Prerequisites to the program are calculus, licensure as a physical therapist and a master’s degree. The purpose of the program is similar to the master’s degree program except that greater breadth and depth in research, teaching and clinical capabilities are emphasized for one area of physical therapy specialization—musculoskeletal, neuromuscular or cardiovascular. The program exists from the Department of Physical Education for Men (see College of Liberal Arts). The program is designed to produce professionals with advanced training for positions of leadership in physical therapy to include graduate and professional educational programs in physical therapy.

### Courses

(May be taken only by students in the professional program.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>101:161</td>
<td>Introduction to Clinical Medicine and Clinical References</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>101:165</td>
<td>Fundamentals of Orthopedics and Clinical References</td>
<td>3 s.h.</td>
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<tr>
<td>101:166</td>
<td>Fundamentals of Orthopedics and Clinical References</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>101:323</td>
<td>Scientific Inquiry</td>
<td>1 s.h.</td>
</tr>
</tbody>
</table>

Normal lecture and teaching assignments are used to define and utilize the concepts of the scientific method. Students are required to write a paper within
Courses in surgery provide opportunities for a unique combination of patient-care-oriented experience and basic surgical research designed to give the investigator student an awareness of the place of surgery among the physician's skills. These courses are available only to medical students and qualified students in associated health sciences.

The student in surgery develops awareness of surgical therapy's place in the treatment of disease. Emphasis is placed upon basic emergency techniques; traumatology; oncology; burns; gastrointestinal and urologic diseases; endocrine disease; transplantations; plastic surgery and reconstruction; peripheral vascular surgery; thoracic and cardiovascular surgery; and neurosurgery. Lectures and conferences are regularly scheduled on specific topics. Special courses in selected topics of surgical research, independent study, and clinical experiences are available to individual fourth-year students by special arrangement with the faculty.

The Department has adequate surgical patients for teaching. Special areas include the Bara Unit, the only one of its kind in the state, which provides adequate patient material for both clinical and basic science research.

The Faculty
Special faculty strengths are centered in the fields of pathophysiology and problems of acute burns, organ transplantation, the surgical control of motility obesity, inflammatory bowel disease, the pathophysiology of biliary tract disease, pediatric surgical, thoracic and vascular surgery, and neurosurgical surgeons have particular expertise in the clinical management of the spectrum of diseases in their specialties.

Courses

Surgery

The Faculty

Special faculty strengths are centered in the fields of pathophysiology and problems of acute burns, organ transplantation, the surgical control of motility obesity, inflammatory bowel disease, the pathophysiology of biliary tract disease, pediatric surgical, thoracic and vascular surgery, and neurosurgical surgeons have particular expertise in the clinical management of the spectrum of diseases in their specialties.

Courses

Surgery

The Faculty

Special faculty strengths are centered in the fields of pathophysiology and problems of acute burns, organ transplantation, the surgical control of motility obesity, inflammatory bowel disease, the pathophysiology of biliary tract disease, pediatric surgical, thoracic and vascular surgery, and neurosurgical surgeons have particular expertise in the clinical management of the spectrum of diseases in their specialties.

Courses
Urology

Department head: David A. Colp
Pathology: pathologists Raymond Berns, David A. Colp; associate professor William Litzenberg, Charles Harvey; assistant professor Stephen Leving; associate Bernard Pule

Modern urology is concerned with diseases of the urinary tract of the male and female, and with the male genital tract. It includes urologic nephropathy, diastolic, and transplantation, the broad areas of urologic pathology, urologic endocrinology and the broad areas of pediatric urology. In addition to the areas of general urology, such as urinary tract stone, urinary tract infections, diagnostic urology and the results of urological tract characterization.

The Department offers courses in all these fields, at the undergraduate and graduate levels and in continuing education for the delivery of urological care.

In the first year of medicine, the Department participates with several of the basic science departments in cooperative endeavors to teach the relationship of urology to the basic sciences. This is especially true in anatomy and pathology. It is — in urology as it relates to transplantation and to cancer, the Department participates actively with the Department of Microbiology.

The Department participates very actively in introduction to Medicine, which involves the entire second semester of second-year medicine. The Department offers courses calculated to illustrate the diagnosis and treatment of diseases involving the genitourinary tract in the male and the urinary tract in the female and the infant.

In the third and fourth years of the curriculum in medicine, the Department offers courses in diagnostic urology, radiologic urology, urologic oncology and the entire field of urology. In the required third-year clerkship, the Department offers the basics of this material, and in the fourth year it offers advanced elective courses of intensive study in these areas.

Continuing education is offered throughout the year for urologists and family practitioners. These activities are conducted by a well-trained staff in the various areas, whose members have intensive interest in certain areas, including pediatric urology, reproductive physiology, urology, and radiation oncology.

A special area, in which the Department has extended international recognition, has been created for the study of prostatic disease. The urological laboratories are active and offer instruction in various areas of research in the areas of urology. Special courses in these areas are available on an elective basis.

Courses

75-156 Clinical Urology 2 a.h.

75-159 Immunopathology: course of study on urology ward; junior medical students responsible for patient care under supervision of resident, attending staff and fellows in urology, covering diagnostic and therapeutic aspects of the disease, emphasizing diagnostic and therapeutic aspects of urology. Lectures by urologists and radiation oncologists, laboratory, with emphasis on urology.

75-166 Urology Grand Rounds 1 a.h.

75-168 Conference on Urology Departments: interesting urological clinical cases of special interest discussed in class, with presentation of clinical cases and case reviews in urology, and introduction by medical staff personnel.

75-170 Urology 2-Day Interpretation 1 a.h.

75-171 Urology 2-Day Interpretation 1 a.h.

75-177 Urology Seminar 1 a.h.

75-171 Urology Seminar 1 a.h.

75-158 Advanced Clinical Pathology 1 a.h.

75-158 Advanced Clinical Pathology 1 a.h.

75-158 Advanced Clinical Pathology 1 a.h.

75-158 Advanced Clinical Pathology 1 a.h.

75-158 Advanced Clinical Pathology 1 a.h.
Urology

180:18 Basic Endocrinology and Reproduction

Arr. 

A comprehensive exposure to modern approaches to clinical endocrinology and reproduction. Emphasis is placed on the evaluation of functional levels of hormone and their relationship to clinical problems. Laboratory and clinical aspects of diabetes mellitus and endocrine disorders will be emphasized.

180:177 Transplantation Seminar Electives

Arr.

A rotation-based seminar in the clinical and laboratory aspects of renal transplantation. Emphasis will be placed on the evaluation of renal transplant patients, immune surveillance, and laboratory aspects of transplantation. Laboratory work and clinical cases will be presented weekly.

180:396 Special Studies on Campus

Arr.

Individual study arranged by written request and approval of the Department. This course may be repeated for credit. It must be completed with the approval of the Department. Individual projects could be conducted by: (1) participation in the renal transplantation program; (2) by conducting a research project in one of the Departments of the School of Medicine and Public Health; or (3) by participation in an endocrinology fellowship.
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.

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. The University of Iowa baccalaureate program is approved by the Iowa Board of Nursing and its graduate quality to take the licensure examination required for practice as registered nurses.

Undergraduate Program

Men and women educated as 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 World Health Organization, the Red Cross, business and industry, urban and rural areas, and professional organizations. A professional nurse may be engaged in clinical nursing, teaching, research or private practice.

A 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 enables many young people not only to realize their highest career potentialities, but to achieve the greater measure of self-fulfillment in life. The baccalaureate program is designed to provide both liberal and professional education. The basic 28-semester-hour program consists of 35 semester hours of general education courses, 40 semester hours of supportive pre-nursing courses and 53 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. Enrollment in nursing courses during one summer session is required of all students. Therefore, most students complete the program in four academic years and one summer session.

Course offerings are based on the concepts of health, deviations from health 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 and permits the selection of an area for beginning concentration in the senior year. With the first nursing course, the student will have the opportunity to apply his or her learning by caring for individuals in a variety of settings.

Approaches to the College of Nursing

The student may complete the entire program at Iowa, enrolling the first year in the University's College of Liberal Arts, or transfer from an institution offering a two-year sequence of specific courses approved by the College of Nursing. Cooperating state institutions in the two-year transfer plan include: Iowa State University, the University of Northern Iowa, and Upper Iowa University. Bachelors degree programs of the University of Iowa provide transfer students with 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 in nursing at Iowa complete the same liberal arts and science courses as students with no previous nursing preparation. Registered nurses planning to enter the
baccalaureate program at Iowa should obtain special information and advice 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 four 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 of the five required biological science courses and satisfaction of the following general education requirements:

- Rhetoric—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, a satisfactory score on the mathematics battery of the American College Tests, or completion of a college course in mathematics comparable to or higher than intermediate algebra (Mathematics 22M:1); 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 hours of literature are required for graduation in nursing, and may be included in the 30 semester hours presented for admission.

Pre-Clinical Background

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 5 s.h.
- Chemistry (Organic and Biochemistry) 5 s.h.
- Anatomy 4 s.h.
- Physiology 4 s.h.
- Microbiology 4 s.h.
- Nutrition 3 s.h.
- Psychology 4 s.h.
- Sociology 4 s.h.
- Anthropology 4 s.h.
- Human Development and Behavior 3 s.h.

Standards

To be considered for admission to the College of Nursing, the applicant should have satisfactorily completed college coursework taken.

The American College Tests

All applicants for admission to The University of Iowa must complete the American College Tests. For information on the tests, write to the American College Testing Service, Box 451, Iowa City, Iowa 52240.

Selection Factors

 Fulfillment of minimum admission requirements does not guarantee admission to the College of Nursing. From applicants who meet minimum requirements, the College's admission committee selects those who appear to be best qualified. The committee may require personal interviews. A physical examination is required prior to final admission.

Application Deadlines

Applications must be received by March 15 for the fall semester, June 15 for the spring semester and January 15 for the summer session. Early application is urged.

Faculty Advisers

Advisors for the College are available to help prospective nursing students plan their programs, and each student in the College works with a faculty adviser.

Expenses

Students pay the general University fees throughout the program, and purchase their own uniforms. The cost of a uniform order currently is about $60. Students must also purchase white shoes, a stethoscope and a watch with a full-sweep second hand. Students may need to provide their own transportation once enrolled in clinical nursing courses.

Financial Aid

In addition to the assistance available to University students generally, there are assistance programs specifically for nursing students. 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, mental health 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.

Research Core, required of all degree candidates

96:210 Introduction to Methods of Nursing Research 3 s.h.
96:220 Nursing Research 2 s.h.
Medical-Surgical Nursing
96:232-233 Advanced Medical-Surgical Nursing I-II 12 s.h.
96:299 Thesis 6 s.h.
Electives from one related area (physiological or behavioral sciences) 9 s.h.

Nursing of Children
96:206 Perspectives in Nursing Non-Thesis Thesis 2 s.h. 2 s.h.
96:241-243 Advanced Nursing of Children I-III, Special Project Nursing of Children 14 s.h. 12 s.h.
Electives (from relevant areas) 11 s.h. 7 s.h.
Thesis 6 s.h.

Mental Health Nursing
96:306 Perspectives in Nursing Non-Thesis Thesis 2 s.h. 2 s.h.
96:350-354 Required Advanced Mental Health Nursing Courses 13 s.h. 13 s.h.
96:355-359 Mental Health Nursing Electives 6 s.h. 3 s.h.
Electives in related area 6 s.h. 3 s.h.
96:299 Thesis 6 s.h.

Nursing Service Administration
96:206 Perspectives in Nursing 2 s.h.
96:205-262 Nursing Service Administration I-III 3 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:

A baccalaureate degree in nursing from a program accredited by the National League for Nursing (or applicants will be considered on an individual basis);

Fulfillment of the legal requirements for the practice of nursing in one state of the United States or in the country in which the basic nursing education was obtained.

Grade-point average of 2.70 in the baccalaureate program or demonstrated ability in graduate courses as stipulated by the Graduate College (conditional status admission to the nursing major may be granted to applicants with a grade-point average of at least 2.50);

Graduate Record Examination (aptitude test) as required by the Graduate College (see Graduate College Information for Prospective Graduate Students' bulletin).

Completion of a basic statistics course prior to admission or in the first semester.

It is also recommended that one of the three required letters of recommendation pertain to the candidate’s nursing competency. 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 eight semester hours, and must be approved by the dean and advisor. A thesis is required of students in the medical-surgical nursing major, and may be selected by others. A major paper or project is included in the final course in all other majors for non-thesis students. A written general examination is required of all degree candidates.

Continuing Education
The College offers non-credit, short-term programs and special projects for registered nurses. They are scheduled both on and off campus. Continuing education units (CEU) are awarded for each offering on the basis of one unit per ten 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 pediatricians' offices. Program requirements:

96:142 Seminar for Pediatric Nurse Practitioners 6 s.h.
70:100 Practicum 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 other preceptors in the local area. The program can be completed in one semester.

Admission
Applicants must be registered to practice professional nursing in Iowa (or be eligible for licensure by endorsement) and have one year of experience in child health care delivery. The general requirements for admission to the College of Nursing apply. Graduate students may enroll for the program as described either prior to or following the required courses in advanced nursing for children.

Facilities
The Nursing Building is centrally located on the University's main campus in close proximity to the colleges of Medicine, Pharmacy and Dentistry, University Hospitals, the Basic Science Building and the Health Sciences Library.

Completed in 1971, the Nursing Building consists of five floors with varied and specialized facilities. Administrative offices are located on the first floor. Faculty offices are located on every floor except the second, which is utilized entirely for classrooms, laboratories and the Learning Resource Center. Additional classrooms and laboratories are located throughout the building.
Conference rooms, student lounges and meeting rooms are conveniently located. Research facilities in the building provide quick access to computing/calculating equipment and programmable minicomputers.

Courses

Undergraduate

09-22-06 Introduction to Health and Health Care Services 3 s.h.
Overview of health and health care services, with emphasis on concepts and philosophy of health, various sections affecting health, current health care systems and trends in health delivery services.

09-20-06 Human Development and Behavior 3 s.h.
Developmental stages of human organism from conception through adolescence; psychological, intellectual, social and emotional aspects. Psychology 201 or 202.

09-91 Nursing I 3 s.h.
Centers on the nursing process with primary emphasis on the assessment phase. Skills with measurement tools, observation and nursing diagnosis, establishment of effective nurse-patient relationship, increased self-sufficiency; students expected to make inferences concerning individual's or family's view of health, based on data obtained; learning experiences in a variety of settings with families and individuals of varying ages and differing stages of development and health.

09-50 Pathology 3 s.h.
Introduction to common physiological and psychological disorders of humans; emphasis on changes that occur in the human organism during illness and the methods used to correct these changes.

09-93 Nursing II 3 s.h.
Health promotion and disease prevention in individuals, families and groups; initiation and maintenance of health throughout life cycle consistent in terms of basic human meta-ethics; emphasis on beginning interventions and evaluation skills; anticipatory guidance, counseling and comprehensive assessment in a variety of settings. Prerequisite: Nursing I.

09-93 Nursing III 3 s.h.
Nursing interventions in crisis situations of acutely ill patients; emphasis on understanding effects of stress, coping, role, homeostasis and other significant issues upon individuals whose psychological conditions precipitate crisis situations. Prerequisite: Nursing II.

09-94 Nursing IV 3 s.h.
Analogy of skills and children in coping with health crises which have long-term implications; particular stress on nursing intervention and evaluation, working with individuals, families and groups in adapting life-style to chronic health problems. Prerequisite: Nursing III.

09-95 Nursing V 3 s.h.
Leadership related to independent nursing practice and interdisciplinary collaboration; group process, decision making, teaching, strategies of progression; organizational skills, motivation for creativity and perspectives for professional growth.

09-96 Nursing in the Social Order 3 s.h.
Introduction to theory, social structures and values affecting major nursing issues in relation to current nursing issues and social, professional nursing's heritage and responsibilities.

09-97 Medical Ethics 3 s.h.
Philosophical, ethical, legal and social issues in medicine, and inadequacy of medical care. Analyzes and evaluates ethical problems in medical care. Emphasis on bioethics. Prerequisite: 96.

09-98 Individual Study 3 s.h.
Supervised study and/or clinical experience selected to meet needs of student. Arranged.

09-101 Human Sexuality 3 s.h.
Psychological and physiological systems of human sexual activity presented in detail by means of the group. Same as Home Economics 221. Social Work 421. Other: 3 s.h.

09-111 Family Dynamics 3 s.h.
Instructive seminar for inner managing "normal" and "pathological" families; students experience in developing and implementing plans of interventions to help family deal with a selected family problem. Prerequisites: 99, 910. Other: 96.

09-112 Family Planning Dynamics 3 s.h.
Family planning and contraception with emphasis on concepts and socio-demographic influences, psychological agents, communication skills and counseling-consulting skills.

09-116 Loss and Death in Clinical Nursing Practice 3 s.h.
Explication of feelings and thoughts clinical in dealing with loss and death in the clinical nursing practice. Prerequisite: 99.

09-118 Leadership in Groups 3 s.h.
Identification of various types and levels of groups, exposure of observational and interpretive skills of group members' behavior and interaction, recognition and utilization of group dynamics; development of leadership skills teaching groups, utilizing evaluation of helpful group leader qualities and assessment of men's own leadership qualities within a group. Prerequisite: 96.

09-131 Institute Dermatologic 2-3 s.h.
Analysis of the use of the institutionalized dermatologic client and interpretation of the results of treatment. Prerequisite: 99, 102, 103.

09-132 Nursing Care of the Hospitalized Orthopedic Patient 3 s.h.
Pathophysiologic conditions and treatment of the hospitalized orthopedic patient; clinical aspects of nursing care in helping the individual and family cope with the existing health problems. Prerequisite: 99, 102.

09-133 Nursing Care of the Adult Experiencing Surgery 3 s.h.
In-depth study of knowledge and skills needed in planning and caring for patient who is experiencing surgical intervention, with focus on the preoperative, intraparative and postoperative period. Prerequisite: 99, 102.

09-134 Sensory Deprivation 3 s.h.
Formulation of the concept of sensory deprivation with application to clinical nursing situations to prevent or decrease effects of sensory deprivation. Prerequisite: 99, 102.

09-136 Acute Careful Nursing 3 s.h.
In-depth study of the knowledge and skills needed to care for patient who have experienced acute cardiac insult with emphasis on assessment of cardiovascular status, medical treatment of various cardiac dysrhythmias and rehabilitation aspects. Prerequisite: 99, 102.

09-138 Interpretation of Cardiac Arrhythmias 1 s.h.
Introduction to the knowledge and skills necessary for interpreting, recognizing and meeting various cardiac arrhythmias. Prerequisite: 99, 102.

09-127 Oncology Nursing 3 s.h.
Development of knowledge and skills and care of the patient whose care includes patients with cancer. Study of selected techniques and medical interventions which are primarily of the psycho-social type. Prerequisite: 99, 102.

09-139 Nursing Care of Adult Patients with Elevated Levels of Awareness 3 s.h.
In-depth study of knowledge and skills needed in assessing and caring for patients with elevated levels of awareness due to physiological disturbances. Prerequisite: 99, 102.

09-141 Genital or Other Developmental Abnormalities 3 s.h.
Study of genital and other abnormalities related to genito-urinary and birth defects, utilization of this knowledge along with knowledge of family dynamics, growth and development, counseling, medical and psychological treatment in working with families who have a child with genital or other birth defects. Prerequisites: 99, 104.

09-141 The Neonate Infant-Growth, Development and Care 3 s.h.
In-depth study of the knowledge and skills needed for the care of the newborn from immediate period to the high risk newborn. Prerequisites: 99, 102, 104.

09-144 Care of the Extempore Family 3 s.h.
Focus on present family and the knowledge and skills needed in anticipatory guidance and teaching/learning to these individuals. Prerequisites: 99, 102.

09-145 Intensive Nursing 3 s.h.
In-depth study of knowledge and skills needed for nursing management of a patient during the intensive period. Prerequisites: 99, 102.

09-146 Use of Literature in Psychiatric Nursing Interventions 3 s.h.
Familiarity with how a variety of psychiatric, emotional and intellectual problems are presented in literature and approaches to these presentations as "case history" with emphasis on using literature in the educational care of patients. Prerequisites: 99, 102.

09-148 Theory in Nursing 3 s.h.
Formulation of the concept of sensory deprivation with application to clinical nursing situations to prevent or decrease effects of sensory deprivation. Prerequisite: 99, 102.

09-151 Medical Ethics 3 s.h.
Supervised study and/or clinical experience selected to meet needs of student. Arranged.

09-154 Nursing Care of Adult Individuals Exhibiting Bizarre Behavior 3 s.h.
Theoretical background on personal dynamics as they are impaired in individuals experiencing bizarre behavior and development of nursing interventions to deal with the disturbed behavior. Prerequisites: 99, 102.

09-156 Public Health Nursing 3 s.h.
Knowledge skills, and abilities needed to provide nursing care in a community agency setting or setting with emphasis on epidemiology, family service and community resources. Prerequisite: 99.

09-159 Community Health Nursing 3 s.h.
Supervised study and/or clinical experience selected to meet needs of student. Arranged.

09-160 Child Health Nursing 3 s.h.
Supervised study and/or clinical experience selected to meet needs of student. Arranged.

09-161 Hospital Nursing 3 s.h.
Supervised study and/or clinical experience selected to meet needs of student. Arranged.

09-162 Psychiatric Nursing Interventions 3 s.h.
Supervised study and/or clinical experience selected to meet needs of student. Arranged.
Graduate

66.100 Primary Care Nursing
6 a.h.

Theory and guided clinical practice in primary care nursing. Health screening of adults and children. Prerequisite: consent of instructor.

66.210 Introduction to Methods of Nursing Research
2 a.h.

Development of scientific approach to knowledge and problem-solving relationships among theory, research and practice considered. Specific research approaches, methods of data collection and problems of measurement of variables; development of research proposal.

66.220 Perspectives in Nursing
2 a.h.

Identifiers and exploration of contemporary issues and trends in nursing.

66.146 Nursing Seminar for Pediatric Nurse Practitioners
arr.

66.250 Nutrition Research
2 a.h.

Analysis and critical appraisal of nursing theories and research; completion of research proposal. Prerequisite: 66.210 and statistics.

66.330 Biophysiological Concepts in Advanced Nursing
3 a.h.

Concepts of the normal human cell relating cellular functions and structures to other concepts operating in human.

66.331 Biophysiological Concepts in Advanced Nursing
3 a.h.

Combination and expansion of 66.230 to include psychosocial concepts operating in the behavioral and social aspects of health. Prerequisite: 66.230.

66.223 Advanced Medical-Surgical Nursing I
6 a.h.

Advanced medical-surgical nursing concepts as applied to patient care. Prerequisites: consent of instructor.

66.253 Advanced Medical-Surgical Nursing II
6 a.h.

Continuation of 66.223, which is prerequisite.

66.342 Advanced Nursing of Children I
6 a.h.

Growth and development of child; philosophy of child care; health promotion and anticipatory guidance; experience provided with well children in a variety of settings. Fall.

66.343 Advanced Nursing of Children II
4 a.h.

Childhood diseases and illnesses and their hospitalization; care of ill child in a variety of settings; supervising experience in facilitating optimum health care for children. Spring semester only after 1977. Prerequisite: 66.342.

66.344 Advanced Nursing of Children III
2-4 a.h.

Individualized internships requiring application of knowledge in a selected functional area. Fall, Prerequisite: 66.343.

66.345 Primary Project Nursing of Children
2-4 a.h.

Project in a substantive area in nursing of children. Prerequisite: 66.342.

66.350 Theoretical Foundations of Mental Health Nursing
3 a.h.

Theories and concepts of mental health and mental illness, assessment techniques and application of these in mental health nursing practice. Prerequisite: consent of instructor. Offered each fall and occasional semesters.

66.351 Nursing Intervention with Individual Adjunctive Behavior
3 a.h.

Psychopharmacological, nursing intervention and evaluation of intervention processes focusing on individuals exhibiting maladaptive psychosocial behaviors. Prerequisite: consent of instructor. Offered each fall and occasional semesters.

66.352 Nursing Intervention and Families
3 a.h.

Assessment of family dynamics, nursing intervention and evaluation of intervention in disturbed family networks. Prerequisite: consent of instructor. Fall, Spring, Summer.

66.353 Nursing Intervention in Groups
3 a.h.

Group dynamics, group process and psychodynamics in nursing intervention with groups of people. Prerequisite: consent of instructor. Fall, Spring.

66.354 Seminar Issues in Mental Health Nursing
1 a.h.

Exploration of trends and issues related to mental health practice. Prerequisite: 6 a.h. of mental health nursing. Offered each fall and occasional semester.

66.355 Mental Health Nursing Practicum—Selected Population
arr.

Study and selected practical experience related to nursing interventions with selected age groups, ethnic groups or communities. Prerequisite: 6 a.h. of advanced nursing and consent of instructor. Fall, Spring, Summer.

66.356 Consultation in Mental Health Nursing
arr.

Study of consultation process and process. Emphasis on methods and application for advanced population groups and settings. Prerequisite: consent of instructor.

66.357 Mental Health Nursing Practicum—Interventional Modalities
arr.

Forward study upon application of nursing theory utilizing a specific interventive technique with individuals, families or groups. Prerequisite: introductory course related to the previous experience and consent of instructor. Fall, Spring, Summer.

66.358 Practicum in Teaching Mental Health Nursing
arr.

Study and application of learning theory, nursing theory and teaching strategies as applied in mental health concepts. Prerequisite: 6 a.h. of advanced mental health nursing and consent of instructor. Fall, Summer.

66.359 Nursing Intervention, Community Social Systems
arr.

Study of community development, social systems, selected problems and mental health assessment models, that affect social adaptation. Prerequisite: 6 a.h. of advanced mental health nursing and consent of instructor. Fall, Spring.

66.360 Nursing Service Administration I
3 a.h.

Administrative concepts and organizational theory crucial to understanding administrator role in a complex modern community hospital. Small group discussions using case method of analyzing nursing administration.

66.361 Nursing Service Administration II
6 a.h.

Functions of nursing department and nursing director in complex health care setting; group discussions of management and analysis of action plans. Prerequisite: 66.350.

66.362 Nursing Service Administration III
6 a.h.

Principles of Staffing Services Administration
Continuation of 66.361.

66.363 Clinical Nursing II
3 a.h.

Designed for nursing care generalists; explores facets of nursing knowledge and provides opportunity for increase of nursing problems in clinical settings. Prerequisite: 66.358.

66.364 Clinical Nursing II
3 a.h.

Continuation of 66.358. Prerequisite: 66.358.

66.365 Thesis
arr.

College of Nursing
381
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.

Undergraduate 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, pharmacautical sociociences, 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 study.

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; 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 s.h.
37:3 Principles of Animal Biology 5 s.h.
4:121 Organic Chemistry I 3 s.h.
4:111 Elementary Quantitative Analysis 4 s.h.
Total semester hours 15 s.h.

Second Semester

46:14 Pharmacy: Orientation 2 s.h.
68:1 Principles of Economics 4 s.h.
4:122 Organic Chemistry II 3 s.h.
4:141 Intermediate Chemistry Lab I 2 s.h.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>60:102</td>
<td>Principles of Human Anatomy*</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>60:102</td>
<td>Special elective</td>
<td>3 s.h.</td>
</tr>
<tr>
<td></td>
<td>Total semester hours</td>
<td>17 s.h.</td>
</tr>
</tbody>
</table>

*Also offered first semester for students on a 3-3 program only. **Eighteen semester hours of electives are required. At least eight semester hours of this total must be taken in the P-4 year.

### Second Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>46:23</td>
<td>Pharmacology I</td>
<td>4 s.h.</td>
<td></td>
</tr>
<tr>
<td>99:162</td>
<td>Biochemistry for Pharmacy Students</td>
<td>4 s.h.</td>
<td></td>
</tr>
<tr>
<td>61:157</td>
<td>General Microbiology</td>
<td>4 s.h.</td>
<td></td>
</tr>
<tr>
<td>60:102</td>
<td>Principles of Human Anatomy*</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total semester hours</td>
<td>15 s.h.</td>
<td></td>
</tr>
</tbody>
</table>

### Second Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>46:24</td>
<td>Pharmacology II</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>46:22</td>
<td>Pharmacological Socioeconomics</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>46:128</td>
<td>Medicinal Chemistry: Natural Products I</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>72:150</td>
<td>Intermediate Physiology (Human)</td>
<td>5 s.h.</td>
</tr>
<tr>
<td></td>
<td>Total semester hours</td>
<td>17 s.h.</td>
</tr>
</tbody>
</table>

*This may be taken in second semester of first year.

### Third Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>46:131</td>
<td>Medicinal Chemistry: Natural Products II</td>
<td>4 s.h.</td>
<td></td>
</tr>
<tr>
<td>69:203-4</td>
<td>Principles of Human Pathology</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>71:101</td>
<td>Pharmacology for Health Sciences: Pharmacy</td>
<td>5 s.h.</td>
<td></td>
</tr>
<tr>
<td>46:35</td>
<td>Pharmacological Socioeconomics</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total semester hours</td>
<td>15 s.h.</td>
<td></td>
</tr>
</tbody>
</table>

### Second Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>46:132</td>
<td>Medicinal Chemistry: Natural Products III</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>71:103</td>
<td>Pharmacology and Toxicology</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>46:38</td>
<td>Pharmacology III</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>46:110</td>
<td>Clinical Pharmacy: Case Study</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>46:41</td>
<td>Special elective</td>
<td>3 s.h.</td>
</tr>
<tr>
<td></td>
<td>Total semester hours</td>
<td>16 s.h.</td>
</tr>
</tbody>
</table>

### Fourth Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>46:111</td>
<td>Clinical Pharmacy: Therapeutics I</td>
<td>2 s.h.</td>
<td></td>
</tr>
<tr>
<td>46:117</td>
<td>Clinical Pharmacy: Clerkship I</td>
<td>2 s.h.</td>
<td></td>
</tr>
<tr>
<td>46:43</td>
<td>Pharmacology IV</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>46:41</td>
<td>Jurisprudence</td>
<td>2 s.h.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Special elective</td>
<td>4-6 s.h.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total semester hours</td>
<td>13-15 s.h.</td>
<td></td>
</tr>
</tbody>
</table>

### Second Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>46:112</td>
<td>Clinical Pharmacy: Therapeutics II</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>46:118</td>
<td>Clinical Pharmacy: Clerkship II</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>46:404</td>
<td>Special elective</td>
<td>4-6 s.h.</td>
</tr>
<tr>
<td></td>
<td>Total semester hours</td>
<td>8-10 s.h.</td>
</tr>
</tbody>
</table>

*A minimum of 8 s.h. of electives must be taken in the P-4 year.

### Professional Electives

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>46:26</td>
<td>Institutional Practice</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>46:48</td>
<td>Community Pharmacy Operations</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>46:45</td>
<td>Pharmaceutical Chemistry: Drug Analysis</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>46:52</td>
<td>Senior Seminar</td>
<td>1 s.h.</td>
</tr>
<tr>
<td>46:56</td>
<td>Non-Prescription Drugs</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>46:101</td>
<td>Pharmacy: Projects</td>
<td>1.5-3 s.h.</td>
</tr>
<tr>
<td>46:102</td>
<td>Physical Pharmacy</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>46:104</td>
<td>Biopharmaceuticals</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>46:105</td>
<td>Industrial Pharmacy Survey</td>
<td>2-3 s.h.</td>
</tr>
<tr>
<td>46:107</td>
<td>Hospital Pharmacy: Survey</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>46:108</td>
<td>Hospital Pharmacy: Survey</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>46:111</td>
<td>Advanced Clinical Pharmacy</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>46:119</td>
<td>Clinical Pharmacy: Elective Clerkship</td>
<td>1-8 s.h.</td>
</tr>
<tr>
<td>46:120</td>
<td>Clinical Pharmacy: Psychopharmacology</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>46:138</td>
<td>Introduction to Natural Product Research</td>
<td>1-2 s.h.</td>
</tr>
</tbody>
</table>

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. For rules and regulations concerning academic probation, pass-fail, credit by examination, second-grade-only option, waiver or substitution of courses, cancellation of registration, drop date and correspondence study, see the "College of Pharmacy" section in the current Schedule of Classes.

### 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.
College of Pharmacy

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 nonpharmacy colleges may 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 pharmacokinetics, medicinal chemistry-natural products, and pharmaceutical economics. A Master of Science degree is available in clinical-pharmacy hospital.

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.

The application deadlines and requirements for grade-point average, GRE score and necessary letters of recommendation are the same as those established by the Graduate College.

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, as 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.

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 Veteran Administration hospitals, the Outpatient Family Practice Clinic, the Iowa Medical Security Facility, Iowa City Mercy Hospital, 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.

Courses

Undergraduate Pharmacoeconomics

46:13 Pharmacy: Meth
3 s.h.
Application of systems of weights and measures and mathematical calculations involved in pharmaceutical procedures and practices; includes introductory lectures in statistics and applications to pharmacoeconomic problems.

46:14 Pharmacy: Orientation
3 s.h.
Ethics, economic and development of the science of pharmacy and profession of pharmacy.

46:26 Pharmacoeconomics I
4 s.h.
Lecture and laboratory on metric scale measurements, characteristic of small particles, pharmaceutical and practical applications of solid dosage forms. Pre-requisite: 46:15, Chemistry 1-402, Physics 39.

46:26 Pharmacoeconomics II
4 s.h.
Lecture and laboratory on application of physical and chemical laws to the formulation and preparation of liquid dosage forms, including solutions, ointments and suspensions. Pre-requisite: 46:25.

46:28 Pharmacoeconomics III
3 s.h.

46:29 Pharmacoeconomics IV
3 s.h.
Lecture and laboratory on availability of drugs, various dosage forms such as drugs, solutions and device systems with emphasis on epithelial, nasal and skin solutions and on the administration of drugs via the large laboratory emphasis patient record systems, techniques of compounding and dispensing and recognition of drug interactions. Pre-requisite: 46:29.

Graduate Pharmacoeconomics

46:101 Pharmacy: Projects
1-3 s.h.
Basic and applied research problems of pharmacoeconomic significance. Pre-requisite: F-3 or above standing, open to graduate students.

46:103 Physical Pharmacy
3 s.h.
Surface and interfacial phenomena, absorption and stabilization in pharmaceutical systems.

46:104 Biopharmaceutics
2 s.h.
Mechanics of drug absorption and interrelationships among properties of pharmaceuticals, dosage forms and pharmacodynamic effects. Pre-requisite: graduate standing or consent of instructor.

46:105 Planning and Research: Survey
2-3 s.h.
Organization, challenge and unit operations in production of pharmaceuticals. Pre-requisite: 46:11.

46:205 Pharmacy: Selected Topics
1-3 s.h.
Research activities in various areas in pharmaceutics. May be repeated for credit.

46:208 Stability of Pharmaceuticals
1-2 s.h.
Mechanisms of deterioration of pharmaceuticals; prediction of shelf-life of pharmaceutical formulations; accelerated storage systems. Pre-requisite: Chemistry 4-112.

46:211 Quality Control
3 s.h.
Lecture and laboratory on instrumental analysis as applied to pharmaceutical quality control; theory and applications of spectrophotometry, Karl Fischer titrations, non-specific and specific spectrophotometry, chromatography, etc.

46:226 Product Development
3 s.h.
Applications of physiological and pharmacoeconomic principles to formulation and design of pharmaceutical dosage forms.

46:227 Product Development
3 s.h.
Continuation of 46:226.

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Undergraduate Clinical-Hospital Pharmacy

46/28 Institutional Practice 2 s.h.
Planning, organization and administration of pharmaceutical services in hospitals and other health care facilities. Prerequisite: junior or senior standing.

46/110 Clinical Pharmacy: Case Study 3 s.h.
Introduction to clinical disease and their treatment; clinical methadologies, principles of drug therapy, laboratory use, medical terminology, abbreviations and use of referral system. Prerequisites: Physiology 70:105, 46:111, Pharmacology 70:105.

46/111 Clinical Pharmacy: Therapeutics I 2 s.h.
Pharmacokinetics of drugs encountered primarily in internal medicine; clinical significance of treatment regimens, analyzed by utilizing clinical case histories. Prerequisite: 46:110.

46/112 Clinical Pharmacy: Therapeutics II 3 s.h.
Pharmacokinetics of disorders most commonly encountered in surgical or minor surgical significance of treatment regimens. Prerequisite: 46:110.

46/117 Clinical Pharmacy: Clinics I 2 s.h.
Application of therapeutic principles to patient care through supervised clinical and professional practice experience in a variety of health care facilities. Prerequisite: 46:110.

46/118 Clinical Pharmacy: Clinics II 2 s.h.

46/118 Clinical Pharmacy: Creativity Clinic 1 s.h.
Selected exercises in health care facilities. An elective course which may be repeated for credit. Prerequisite: 46:110 and consent of instructor.

46/120 Clinical Pharmacy: Psychopharmaceutics 4 s.h.
Lecture and laboratory course concerned with rational use of psychotropic drugs in treatment of psychiatric disorders. Prerequisites: 7:4 or graduate standing.

Graduate Clinical-Hospital Pharmacy

46/107 Hospital Pharmacy: Survey 3 s.h.
Hospital practice of American health care system: financing, planning, administration, organization and management, with particular attention to pharmacy: statistics, staffing and operating hospital pharmacy; particular emphasis on supervision of pharmacy; retail pharmacy and outpatient clinics. Prerequisite: consent of instructor.

46/108 Hospital Pharmacy: Seminar 3 s.h.
Continuation of 46:107. Clinical staff—physicians, pharmacists, nurses, laboratory personnel, retail pharmacy. Specific focus on hospital pharmacy; survey of literature; drug distribution and pharmacy services, and pharmacy service systems; drug utilization review; drug information services; planning and design; budgeting and reporting. Prerequisite: consent of instructor.

46/114 Advanced Clinical Pharmacy 4 s.h.
Application of principles of pharmacology and pharmacodynamics to the treatment of hospital industry; patient's participation in ward rounds and conferences with medical staff, and medical students in various types of drug therapy; emphasis on medical, drug selection, adverse effects of drugs and disease modification by non-drug measures. Prerequisite: 46:110 and consent of instructor.

46/115 Clinical Pharmacy: Drug Literature Review and Evaluation 5 s.h.
Acquaints the pharmacists with the literature of hospital pharmacy practice, including clinical practice, emphasis on techniques of evaluating biomedical literature: drug distribution, statistics, computer linking, etc. Prerequisite: consent of instructor. An understanding of statistics is necessary.

46/254 Hospital Pharmacy: Paper-lecture 3 s.h.
Theory and applications presented with pertinent and reading of pertinent design forms.

46/265 Hospital Pharmacy: Research 1-3 s.h.
Topics of current interest in the specialty of hospital pharmacy may be repeated for credit.

50/467 Hospital Pharmacy: Directed Study In Administrative Problems 1-3 s.h.
Application of basic organizational and administrative theory to practical problems in hospital pharmacy administration: materials and personnel management, budgeting and forecasting, systems and physical plant design. Prerequisites: 46:106, Introductory Medicine and Environmental Health 50:101, or equivalent.
Continuing Education

The Division of Continuing Education was established by special appropriation of the General Assembly of Iowa to render a larger service to the Commonwealth and its people of Iowa by extending its activities to every part of the State. It is thought, the ideals and the spirit of the several departments and colleges of the University and by bringing the University generally into closer contact with the citizens. The Division's organization and services include:

Credit Programs

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 may obtain the permission 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 $3 enrollment fee. The course fee is $20 per semester hour. Fees are payable at the time of registration. A catalog including procedure and enrollment form may be obtained from Correspondence Study, The University of Iowa, Iowa City, Iowa 52242.

The University, in cooperation with the Department of Defense, offers many correspondence courses to men and women in the armed services. Personnel should visit their Education officer.

Veterans Administration Courses
Veterans may enroll for correspondence courses concurrently with other academic study under Public Law 90-340. Veterans are referred to Veterans Affairs Office of the University.

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 Center for Credit Programs, 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 and Evening Class Program
This program provides credit course offerings for part-time undergraduate, graduate or unclassified students. Courses are offered from all schools and departments of the University. Through this program a selection of women's studies courses are offered. For a Saturday and Evening Class catalog, write to the office.

Education Tests
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 interpretations are carried in stock for distribution, in most cases at the publishers' list price. Buyers order test forms from this one source to save time and transportation costs. Orders received for items regularly carried in stock are usually shipped within 24 hours. 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 for 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 28,000 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, staff, students, officers, and other University-related group functions to be held on campus (or in the Iowa City-Cedarville community) are expected to schedule these activities through the Conference Center office and to utilize the conference facilities, dining services and lodging accommodations at the Iowa Memorial Union, to the extent they are available and appropriate.
Adult Education Mini-Course Program
This open enrollment program provides a wide variety of non-credit, short-course offerings of special interest to adults. Courses are normally conducted at the Iowa Memorial Union during evening hours by University affiliated instructors. Continuing Education Units are awarded for course completion. For current catalog offerings contact the Center for Conferences and Institutes.

Radio Broadcasting Services
WSUI and KSUI-FM serve the needs and interests of the people of eastern Iowa with an 18 hour/day, 365 days/year broadcasting service which extends the resources and activities of the University. The broadcast schedule consists of educational, cultural and informative programming not available elsewhere. As an affiliate of National Public Radio (NPR), WSUI contributes program materials to a national network of more than 180 non-commercial radio stations. The main studios and offices are located in 3300 Engineering Building and a free copy of the Program Guide may be obtained by writing to that address.

Institute of Public Affairs
The mission of the Institute is to help improve state, city and county governments in Iowa by serving as the primary research and continuing education link between the University and these 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 its research, the Institute provides recommendations to the public and the police. The Institute also works to improve cooperation between the public, police and citizens.

Institute of Public Affairs provides:

In-service training and continuing education services to public personnel, particularly managers and supervisors, offering a wide variety of courses and programs aimed at meeting individual and organizational 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 issues 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 local police agencies, including entrance and promotional examinations, general administrative or specialized surveys, and specialized training programs. It also carries out research programs in areas of public safety. Upon request by law enforcement agencies, the Bureau conducts personnel examinations, administrative surveys and record surveys.

Iowa Center for Education in Politics
Supported by gifts from foundations and others and headquartered in the Division of Continuing Education, 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 students prepare their teaching about politics at the high school level. These programs are planned in cooperation with leaders of the locally recognized political parties of the state and college faculties and administrators.

Iowa Program IMPACT
The Division serves as an 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, recommends appropriate institutional activities which would assist in solving these 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 College of Education. The Office's purpose is to promote articulation between Iowa's nine community colleges and vocational technical institutes and The University of Iowa. In these activities involving discipline articulation, the Office directs its activities to the present 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 is teaching and research on campus and on the Lake. Research is carried on at Iowa State University, University of Northern Iowa, The University of Iowa. Two terms of five weeks each are held during June, July and August. Facilities for year-round research are available. For information, write to the Division of Continuing Education.

Macbride Field Campus
The University holds a lease from the U.S. Army Corps of Engineers on two tracts of land in the Coralville Reservoir area north of Iowa City. The two tracts total approximately 620 acres. One tract is reserved for biological research, the other for University-wide activities. Basic services in the area include provision of an access road, water supply, electric power, maintenance storage facilities, a boat house and sailing facilities, field archery course, facilities for handicapped persons and picnic area.

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 Audio-visual Center of faculty and/or graduate assistant is encouraged.

Media Library

Major collections of 16mm motion pictures and magnetic tape recordings are available through the Media Library. Catalogs of materials are published periodically. Systematic addition to these collections are made according to requests and funds available. No charge is made for films used in classrooms 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, flipstrip, opaque and overhead projectors; audio tape recorders; record players; portable videotape 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

Production specialists, professional facilities and equipment are available to produce graphs, charts, maps, slides, layouts, posters, illustrations, models, exhibits and overhead transparencies; black and white and color photographs, negatives, microfiche, slides, portraits, specialized photography; sound and silent motion pictures, videotapes, filmstrips, sound-slide presentations, production scripts, narration and audio tapes. Still photographic and motion picture printing and processing laboratory services are available. Certain equipment is available for loan. Reasonable charges are made for production materials and service.

Satellite Centers

Satellite centers are established as needs 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.
Education through Service
The University of Iowa Health Care is the largest single provider of health care in Iowa, and one of the largest in the nation. It is a teaching hospital, meaning that it is a center for the education of medical students and residents. The university's School of Medicine and the College of Nursing are both nationally ranked, and the university has one of the largest graduate medical education programs in the country. The university's hospitals and clinics are engaged in a wide range of research, including basic science, clinical, and epidemiological research. The university is also a major contributor to the state's economy, employing thousands of people and providing millions of dollars in economic benefits to the state.
Highly specialized health services—e.g., the burn unit, heart coordination facilities, ancillary intensive care units—are readily accessible to low-cost residents, serving a large portion of the state. Other facilities that provide services to the aged, chronic, and terminally ill include the current users. The hospitals provide patient transportation services for patients who travel more than 200 miles and whose hospital care is arranged by the Illinois Hospital Association. The hospitals provide patient transportation services for patients who travel more than 200 miles and whose hospital care is arranged by the Illinois Hospital Association. The hospitals are located in a variety of communities throughout the state. These services are provided through the hospital’s Department of Nursing and include the following:

1. **Inpatient Services**
   - Rehabilitation and post-acute care
   - Home health and hospice services

2. **Emergency Services**
   - 24-hour emergency services
   - Trauma and critical care units

3. **Outpatient Services**
   - Specialized clinics for various medical conditions
   - Diagnostic testing

4. **Support Services**
   - Counseling and mental health services
   - Social services and discharge planning

The University Hospitals of Illinois are a network of teaching hospitals serving the needs of patients throughout the state. The hospitals are affiliated with the University of Illinois at Urbana-Champaign and offer a wide range of medical and surgical services. The hospitals are committed to the provision of high-quality care, education, and research.

**Health Occupations Education**

The program at the University of Illinois provides training in various health occupations. The program is designed to prepare students for entry-level positions in the health care field. The program includes coursework in anatomy, physiology, pharmacology, and clinical skills. Upon completion, students are eligible to sit for state licensing examinations. The program also offers opportunities for students to gain practical experience through internships and externships. The University of Illinois offers degree programs in nursing, radiologic technology, and respiratory therapy, as well as certificate programs in other health occupations.

**Health Sciences Library**

The University of Illinois Health Sciences Library is a comprehensive resource for students, faculty, and staff in the health sciences. The library houses a collection of books, journals, and other materials related to the health sciences. The library provides access to online databases and other electronic resources. The library also offers consultation services to help users find and evaluate information.

**Health Services Research Center**

The Health Services Research Center is a multidisciplinary research center that conducts research in health services and policy. The center conducts research on a variety of topics, including health care delivery, financing, and policy. The center also provides consulting services to government agencies, health care organizations, and other stakeholders.

**Iowa Mental Health Authority**

The Iowa Mental Health Authority is a state agency responsible for the regulation and licensing of mental health professionals. The agency also provides funding for mental health services through the Medicaid program. The agency is committed to ensuring that mental health services are available to all Iowans, regardless of income or insurance status.

**Counsel on Speech Pathology and Audiology**

The Council on Speech Pathology and Audiology provides training and certification for speech-language pathologists and audiologists. The council also provides continuing education opportunities for professionals in the field. The council is dedicated to advancing the profession and improving the quality of care for individuals with communication disorders.
University Hospitals and Clinics

Oakdale Campus
Located one mile northwest of the Health Center, the 525-acre Oakdale campus includes hospital facilities for tubercular patients, an acclimatization treatment unit, neurophysiology and pediatrics research laboratories, the accident prevention laboratory of the Institute of Agricultural Medicine, research animal-care facilities, a Model Clinic for Family Practice, and a Model Rural Health Center.

Psychiatric Hospital
Part of the University Hospitals system, Psychiatric Hospital contains clinical and research laboratories in neurophysiology, biochemistry, and psychology. The electroencephalographic laboratories serve the entire University of Iowa Health Center.

State Hygienic Laboratory
Laboratory staff members perform a variety of diagnostic, serologic, training, and consulting services in such areas as bacteriology, parasitology, industrial hygiene, serology, virology, health physics, radiation chemistry, water and air pollution, drinking water analysis, pesticides and herbicides, toxicology, mineral analysis, and disease surveillance. The Laboratory provides virological and serological diagnostic services for University Hospitals and Clinics and for the U of I 1 Student Health Service.

State Services for Crippled Children
Crippled children's services are supported by federal appropriations through the United States Department of Health, Education, and Welfare and by state appropriation through the University Hospitals. The purpose of SSCC is to provide a state-wide program of services for Iowa children with special health problems and multiple handicaps. Health services are available to any person under the age of 21.

Diagnostic and evaluation services are offered at child health clinics conducted annually in communities throughout the state and at clinics of the University of Iowa Hospitals. Medical examiners at the clinics are staff members in the departments of Pediatrics, Gynecologic Surgery and Obstetrics-Gynecology. Diagnostic services are also provided in the areas of speech pathology, audiology, and clinical psychology.

SSCC patient service staff assists the children's families in making arrangements to obtain the care and treatment recommended by the clinic and make certain that the plan is implemented.

To support its program at the local level, SSCC sponsors regional village offices where staff participate in the development and improvement of community resources for delivery of child health services.

The agency conducts research in the cause and treatment of special health problems related to handicaps, such as rheumatic fever, cystic fibrosis, spina bifida, muscular dystrophy, mental retardation, and other conditions of the newborn.

SSCC sponsors a graduate training program in audiology and speech pathology within the University.

University Hospital School
A University-affiliated facility dealing with the problems of physically handicapped and mentally retarded children and young adults, the University Hospital School is located in the Health Center complex on the University's west campus.

The University Hospital School interdisciplinary team approach provides services involving the fields of medicine, dentistry, nursing, nutrition, speech and auditory, physical and occupational therapy, recreational therapy, psychology, social work, special education, physical education, homemaking-family living, music and vocational and vocational activities.

Through the daily operation clinic many of the handicapped individuals are followed periodically to monitor their progress and provide guidance to parents or others for management at home. Recreational, educational, and social-management facilities providing programs for these people is an equally important service.

The program of the hospital 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. Since an important goal is to return these individuals to their local communities as soon as practicable, the duration of stay in the School varies according to the needs of the individual.

The day program provides special education, therapy, and functional training for selected children and young people who are mentally retarded and who reside nearby.

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 center staff, either in or outside the University, and for professional personnel interested in this field. Furthermore, many other training opportunities are arranged for those already engaged in working with the developmentally disabled. Over 940 college and university students at graduate and undergraduate levels are involved in significant training activities at this facility each year.

The School's research objective is to improve knowledge about new methods of study of developmental disabilities, handicapping conditions and related problems, and to provide for the dissemination of pertinent findings.

University Speech and Hearing Clinic
Located in the Wendel Johnson Speech and Hearing Center, the Speech and Hearing Clinic provides training for students of the Department of Speech and Hearing Sciences. The clinic staff includes audiologists and speech pathologists, the staff includes a psychologist, and evaluations and consultation by psychologists and other health care professionals can be arranged when appropriate.

The Clinic provides on-campus consultation and consultation services for individuals with speech, language, and hearing problems; day-clinic habilitation or rehabilitation service programs for persons who can come to the Clinic 4 times a week; and a summer residential program for children with speech, language, hearing, and/or reading problems.

The Veterans Administration Hospital
Medical students and residents may receive much of their clinical training at this 300-bed hospital, which is associated with the University's Health Center. It includes laboratories for the rehabilitation program, highly specialized laboratories for research 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, immunology, pathology, and applied immunology.
General Services

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 University community but for the people of the state and region. The Center comprises many of the academic units of the Division of Fine Arts in the College of Liberal Arts, together with the Museum of Art, E.C. Mahie Theatre, Chap Recital Hall and Harper Hall in the School of Music, and Hancher Auditorium, the Center’s newest and largest showcase.

Hancher Auditorium
Virgil M. Hancher Auditorium is one of the nation’s finest facilities for a full range of programs in music, dance and theater. Although its 2,384 seats make it one of the United States’ largest modern theaters, its design, coordinating functional with audiovisual excellence, achieves unusual intimacy. The Auditorium is named after Virgil M. Hancher, president of the University 1940-64.

Museum of Art
Impeccable for the construction of the University’s Museum of Art came from Owen and Leone Elliott, when they offered their superb art collection to the University. Opened in 1969, the Museum is located immediately south of the School of Art and Art History in the Center for the Arts across 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 exhibitions. Addition of the Carver Galleries in 1976 significantly increases the Museum’s display capacity.

Museum of Natural History
To meet the needs of the general public and the various departments of the University, the Museum provides a repository and the professional support for the University’s activities by gift or through the efforts of its own collections. It designs and executes new exhibits of education value and offers instruction in the conceptual and technical phases of exhibit preparation and the general operational procedures of small science museums. Habitat exhibits of North American mammals include the American bison, the anteelope, the mountain lion, the American moose and the beaver. A large and well-known bird habitat exhibit is the Layman Island, a zoological display of a bird island of the Hawaiian group. Other habitat exhibits include The Boring Sea, the Louisiana Swamp, the Fall Migration and Caves on Stony Lake Prairie. The crane exhibit includes the sandhill crane and the rare whooping crane, as they appear on the prairie during migration.

The major invertebrate phyla are represented in several exhibits and include such familiar groups as the arthropods, mollusks, echinoderms and coelenterates.

Ethnological exhibits in the Museum present materials from many parts of the world. Indian and Eskimo materials, including beadwork and carved ivory received in the late nineteenth century, are exhibited. As the art of humans through 17 million years of time is portrayed in a displaying feature of fossil remains from Africa, Asia and Europe.

Several displays related to the geology of Iowa and include typical fossil specimens.

Office of International Education and Services (OIES)
The OIES is the focal point for University international education activities. It works in the areas of international studies, international educational exchange and technical assistance.

The OIES seeks to promote the development and cooperation among the various aspects of international studies—foreign language and area studies, comparative and topical studies, and foreign language departments. It also assists faculty and students seeking grants or fellowships for study or research that have an international perspective.

The OIES seeks to encourage the development of formal linkages between University departments and programs and their counterparts in foreign institutions by means of technical assistance and faculty exchange programs.

Regarding international educational exchange, the Foreign Student Adviser in the OIES provides assistance to foreign students, faculty and professionals on immigration and other matters. The Overseas Opportunities Center provides information to American students and faculty who wish to study, travel and work abroad. It also helps faculty members arrange study-abroad programs, and provides information on travel abroad for the University community.

The International Center is open to all University and Iowa City community members who have international interests. Facilities and programs are designed to encourage the interaction between people of all cultures.

Additional OIES activities involving students are described in the Center’s “Student Activities.”

Public Information and University Relations, University News Service
The Office of Public Information and University Relations seeks to foster understanding, within the University and among the general public, of the University’s aims and activities.

Units within Public Information and University Relations are the University News Service, the Health Center Information and Communication Office, the Sports Information Service and the media relations personnel of the Iowa Center for the Arts. These units supply news and information to mass media, gather and prepare informative material for special and general interest periodicals, help prepare special University publications, answer requests for information and assist writers, photographers and broadcasters who visit the campus.
Public Information/University Relations publishes Spectator, Faculty Newsletter, Staff Newsletter, Campus Correspondent, Calendar of Events and Programs; provides campus tours and other services for University guests; manages the Old Capitol national historic landmark; prepares displays and exhibits; provides copy and photos for publications; assists groups seeking University speaker, and serves as the executive office of the Parents Association.

Publications and Printing Services
The Department is responsible for the production of all printed material prepared for the University. The Publications staff provides assistance to departments and campus organizations in planning, editing and designing copy. Printing Service is the production agency of the Department, with a printing plant and five Copy Centers located strategically about the campus for quick, inexpensive reproduction service. The Department also operates Campus Stores, an on-campus distribution agency which sells manuals, lab 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.

Reading Clinic
The Children's Reading Clinic in The University of Iowa College of Education 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 and use instructional material that are suited to their needs and abilities.

The Clinic teaching program is located in Iowa City elementary schools during the academic year. Here the staff provides diagnostic instruction for children at all reading ability levels. 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 teachers that are under the supervision of the Children's Reading Clinic are trained by state and national clinicians under the close supervision of Clinic staff members.

Recreational Services
The Division of Recreational Services administers a program of more than 20 intramural sports and recreational activities for all interested University students; offers a wide range of co-educational lesson programs in such activities as karate, tennis, golf, yoga, aerobics, judo and gymnastics; and provides informal activities for students, faculty and staff members, and their spouses and families. Activities include basketball, badminton, volleyball, table tennis, swimming, handball, paddleball, squash, canoeing, off, archery, weight training, billiards, spaceball, tennis, foosball and ping pong. Bicycles, snorkles and cross-country skiing equipment are also available for a minimal renting fee.

The University of Iowa Alumni Association
The principal agency through which Iowa students continue their identity with the University also may leave campus is the University of Iowa Alumni Association. Organized in 1867, the Association's current membership includes graduates and former students throughout the world.

The Association's continuing objectives are to identify alumni with the University; to strengthen public recognition of the University as an institution vital to the stability and welfare of the state and the nation; and, through organized alumni effort, to serve the University in strengthening its programs in teaching, research and public service. The Association publishes the Iowa Alumni Review, a bimonthly magazine for Association members.

The University of Iowa Foundation
The University of Iowa Foundation was organized to help the University obtain the greatest possible educational benefit from private giving. It raises funds for this objective through three 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 on them, 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 constantly at work to provide more funds for student financial aid, faculty support, library acquisitions and other needs throughout the University.

University Personnel Services
The University Personnel Services 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, non-teaching and non-student employees of the University. The University Personnel Office is responsible to 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 record-keeping 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 mission and to have the relevancy, freshness and effectiveness expected of a distinguished institution of higher learning.

The University holds that the term "research" applies to creativity in all fields. Imaginative originality, whether in the fine arts or in the sciences, is of a common characteristic and significance in the overall intellectual life of the institution.

The Office of the Vice-President for Educational Development and Research maintains an overview of the many individual research commitments of the institution and initiates continuing studies of the nature, extent, requirements and results of the University's research office. This office has an interlocking relationship with the Graduate College, because of the all-University character of the College and the close connection between the graduate programs and research and creative activity.

The University Research Council advises the Vice-President for Educational Development and Research in a regular advisory capacity. The Council consists of ten senior faculty members with widely recognized personal involvements in basic research or creative activity, one representative of the University staff, and two student members. Faculty members include two each from the physical, biological and social sciences and the humanities, and two from the faculty at large. The Council gives regular consideration to such matters as the establishment of general policies with respect to the University's research and creative efforts, the review of policies and procedures concerned with securing and allocating funds for support of research and creative activity, and additional matters related to the general research and creative functions of the University and the health of basic scholarship on the campus.

Programs

With the advice of the University Research Council and other appropriately involved officers and committees of the University, the Office of the Vice-President for Educational Development and Research currently supports the following programs:

Junior Faculty Research Support

A limited amount of money is available each year from the National Science Foundation, in support of the initial research efforts of junior faculty members (other than those in the colleges of Medicine, Dentistry, and Veterinary Medicine). Research interests of junior faculty (other than those in the colleges of Medicine, Dentistry, and Veterinary Medicine) who wish to do health-related research. To qualify, the faculty member must hold a full-time appointment as instructor or assistant professor. The funds may be used for any purposes that assist in the development of a full-fledged program of research.

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 method 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, and for honoraria and expenses of visiting instructors.

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:

Computer Center

The 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 involving several colleges in Iowa and Illinois. Conversational programming by way of type-written 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 units. 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 progress of study and assists in the coordination of curricula in areas related to children, advises faculty in regard to contact with the educational system, and aids in the development of new areas of research. The Institute serves as an advisory and consultative function in the development of research projects relating to the social sciences.

Research Services and Administration

This office maintains a research 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 educational assistance to achieve effective organization and technical correctness in an application. Staff also assists in processing an application through the University and is located in the appropriate office of the University'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 S4 having a resolution of 150 angstroms and a useful magnification range of 20 to 30,000 diameters. In 1974, the scanning electron microscope was modified to improve performance, by the addition of a liquid nitrogen 90° tilt pump system. The microscope is also capable of being interfaced with an energy dispersive x-ray spectrometric 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 Educational Development and Research, these units have a special role in the conduct of research at the University:

Agriculture Law Center
See "College of Law."

Center for Communication Study
Ses "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
The Center for World Order Studies (formerly a project of The Stanley Foundation of Muscatine, Iowa) was established in June, 1977, at The University of Iowa, to provide education and research in the causes of and potential crises 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 lowell-Illinois area, the major function of the Center was to promote increased understanding of these world order problems through curriculum innovation and revision. Now an integral part of the University, the Center coordinates a multidisciplinary, non-degree program in World Order Studies at the University.

Child Development Clinic
The Child Development Clinic is an outpatient facility and is a division of the Department of Pediatrics in the University Hospital. The Clinic is primarily a diagnostic clinic for developmental problems in children. The Clinic will provide a comprehensive study of any child under 18 years of age who has problems in development, speech and language, poor school performance or learning disability, hyperactivity, mild behavior problems, 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 legislatures in political development. It provides research training for graduate students and foreign research associates and facilitates collaborative research projects jointly undertaken by faculty at The University of Iowa and by foreign scholars.

Health Services Research Center
The purpose of the Center is to foster research, scholarship, continuing education, and demonstration projects relevant to the health needs of rural areas and smaller communities. The Center complements the University's programs in health sciences education and pilot demonstration projects in the delivery of health services.

Institute of Agricultural Medicine and Environmental Health
The Institute of Agricultural Medicine and Environmental Health, housed in the Agricultural Medicine Research Facility on the Olds Lake Campus, is a part of the Department of Preventive Medicine and Environmental Health, College of Medicine. Research, teaching and service activities are centered on the safety and health problems of those who live in rural Iowa by occupation or choice. Areas of study include environmental toxicology, comparative medicine, occupational health, the Accident Prevention Laboratory and the Iowa Pesticide Epidemiology Studies Center.

Institute of Hydraulic Research
See "College of Engineering."

Institute of Public Affairs
The mission of the Institute is to improve state and local government and administration in Iowa. To fulfill this mission, the research and publication activities of the Institute seek to promote citizen understanding of and appreciation for their governments, help public officials better understand their roles and responsibilities, assist government in their personnel development activities, and help public officials and citizens in their efforts to implement change. (See "Extension and University Services.")

Institute of Urban and Regional Research
Primary objectives of the Institute are to broaden knowledge in the area of urban and regional studies, to enrich the teaching programs in participating departments, and to initiate and carry out interdisciplinary research projects. Through the acquisition of grants and contracts and other off-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," in the "College of Liberal Arts" section of the Catalog). In addition, the Institute's Center for Locational Analysis provides a focus for investigating the spatial efficiency of public services.

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 1958 as a permanent interdisciplinary research and training agency. Research has been disseminated in several 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 relationship of crime to juvenile delinquency and adult criminal careers 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 phase 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.

Radiation Research Laboratory (Radiation Biology)
See "College of Medicine."

Toxicology Center
The Iowa Center for Toxicology and Biological 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 rate, the biological adaptation and regulation associated with their use, studies on their teratologic and toxic effects and their mechanisms of action at the molecular level. Doctoral degrees in pharmacology are offered.

Social Sciences Data Archive
The Social Science Data Archive is a library of empirical data that can be re-analyzed by both faculty and students in their research and training. Approximately 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.
Financial Aids

All financial assistance available to University of Iowa students from general University sources is administered by the Office of Student Financial Aids. Assistance is provided through scholarships, grants, loans and part-time job placements.

A student seeking assistance must first complete University admission procedures, including the American College Test, and submit a parent's financial statement through ACT Financial Aid Services, Box 1000, Iowa City, Iowa 52240, or the College Scholarship Service, Box 300, Hankamer, California 94710. When it receives a copy of the parent's statement, the Office of Student Financial Aids 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 Aids. Application deadline is February 1.

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 GPA.

Freshman Honors Awards
Entering freshmen eligible for invitation to participate in the University of Iowa Honors Program are recognized in Freshman Honors Scholarships and receive the University's $100 Freshman Honors Award.

Basic Educational Opportunity Grants
The maximum BEOG is $1,400 minus the amount of comparable 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. SDOG grants range from $200 to $1,500 a year but cannot exceed one-half of the recipient's total assistance.

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 $5,000 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 concludes 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.

Law Enforcement Education Program
This program consists of federally-funded loans and grants. Loans can be up to $2,200 per year, and grants can be for a maximum of $400 per semester to be used for school cost of tuition and books. To be eligible for the loan program, a participating student must have more than 15 hours of coursework directly related to law enforcement. All participating schools are eligible for grants. The program is available to pre-service and in-service law enforcement personnel. A recipient can be either a full- or part-time student.

Guaranteed Loans
Students participating in this program may borrow a maximum of $2,500 per year. Money may be borrowed through commercial banks, credit unions, savings and loan associations and other eligible lending institutions.

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 Aids. The most numerous opportunities are in University service and hospitals.

Work-Study
Part-time work available through the Office of Student Financial Aids is provided under the federal Work-Study Program, the purpose of which is to enable college-qualified members of low-income families to earn college expenses not covered by other assistance. Work-study employers cannot work more than 15 hours a week. As far as possible, work-study jobs are arranged to give employers work experience related to their educational goals. (A separate publication listing scholarships, loans, awards and prizes available to students in the several colleges of the University is available upon request from the Office of Admissions, 107 Calvin Hall.)
Administrative Officers

State Board of Regents
The University of Iowa, Iowa State University of Science and Technology, the University of Northern Iowa, the Iowa Braille and Sight-Saving School and the Iowa School for the Deaf are governed by the State Board of Regents, consisting of nine members. The Board membership is as follows:

- President: Mrs. H. Harold Penman, Hinton
- Vice-president: Mrs. H. Harold Penman, Hinton
- Secretary: T. Wayne Bondy
- Treasurer: Dr. Robert C. Sneller, Arkansas
- Director of Schools: Dr. Jerry M. Spalding, Spalding
- Director of Libraries: Dr. Edward H. Jennings, University of Iowa

Central Administration

- President: William L. Boyd
- Vice-president for Academic Affairs and Dean of the Faculties: May Fradet
- Vice-president for Administrative Services: William R. Doane
- Vice-president for Business and Finance: Dean T. Bickford
- Vice-president for Educational Development and Research: Dean of the Graduate College: Dean C. E. Sprague
- Vice-president for Student Services and Dean of Administrative Affairs: Dean C. E. Sprague
- Coordinator of Libraries: Howard W. Jennings

Academic Affairs

- Vice-president and Dean of the Faculties: May Fradet

College of Business Administration
Dean: W. L. Brannan
Center for Labor and Management: Dean: Donald Thompson

College of Dentistry
Dean: James H. McLennan

College of Education
Dean: Howard R. Jones

College of Engineering
Dean: Robert G. Waring
Institute of Hydraulics Research: Director: John F. Kennedy

Graduate College
Dean: Dean C. Sprague
Dean of Advanced Studies: Robert W. Schals

College of Liberal Arts
Dean: Dennhy B. Smith
School of Art and Art History: Dean: Warren S. Trowbridge
School of Journalism: Director: Kenneth Smith
School of Letters: Dean: Dean C. Sprague
School of Law: Dean: Dean C. Sprague
Institute of Liberal Sciences: Director: Paul W. Wannas

School of Music
Dean: Howard F. Freeman
Scholar of Regius

College of Fine Arts
Dean: James C. Spalding
School of Social Work
Dean: Dean H. Wals

College of Law
Dean: N. William West

College of Medicine
Dean: John W. Eichiner

College of Nursing
Dean: Evelyn D. Bark

College of Pharmacy
Dean: Dale B. West

Division of Continuing Education
Dean: Robert H. Boyd
Administrator: Dean: William G. Oglesby
Bureau of Public Safety
Director: Richard N. Kuchta
Center for Conference and Institutes
Director: Joel W. Perry
Center for Credit Programs
Director: Center for International Development
Director: Institute of Public Affairs
Director: David E. Strickler
Iowa Lakeside Laboratory
Director: Richard V. Boklak
Radio Sciences WUBK-ED
Director: Hugh V. Canfield

Libraries:
Dean of Library Administration: Leslie W. Denning

Summer Session
Director: Ray A. Niles

Educational Development and Research
Vice-president: Dean C. Sprague
Office of Research Services and Administration
Director: Margaret K. Hopkins
Office of Project Development
Director: John D. Nichols
Office of International Education and Services
Director: Stephen M. Anns
Computer Center
Director: Howard L. Deckay

Public Information and University Relations
Coordinator: Thomas L. Tolle

Institute of Urban and Regional Research
Director: Kenneth J. Duster

Student Services
Assistant Director: Philip G. Hagen

Admissions
Director: John E. Nance

Registrar
University Registrar and Dean of Ceremonies: W. Abbott Cut

Iowa Center for the Arts
Coordinator: James H. Warkentin

Hancher Auditorium
Director: James H. Warkentin

Iowa Memorial Union
Manager: James M. Baran

Dean of Students
Dean: Marion L. Syv

Student Activities
Director: Bill G. Witz

Career Services and Placement
Director: Carolus Hamblin

University Counseling Service
Director: E. Mary Moore

Student Financial Aid
Director: E. Mary Moore

University Examination and Evaluation Services
Director: Douglas R. Whitney

Recreational Services
Director: Harry R. Gander

University Health Services
Assistant to the President for Health Services: John W. Colombo

University Hospitals and Clinics
Director: John W. Colombo

Psychiatric Hospital
Director: George Woodard

State Hygienic Laboratory
Director: William J. Rusler

University Hospital School of Optometry
Director: Raymond E. Riddick

Student Health
Director: Harly G. Peith

State Services for Crippled Children
Director: John C. Mencher

Administrative Services
Assistant Vice-president: William M. Starbuck

University Personnel Service
Director: Paul H. Duker

Residence Services
Director: Harold D. Livingston

Facilities Planning and Utilization
Director: Robert J. Gilbert

Museum of Art
Director: Jan K. Makinen

University Architect
Robert R. Johnson

Environmental Health Services
Director: Paul E. Klippenstein

Business and Finance
Assistant Vice-president: Elva T. Stitelle

Business Office
Business Manager and Treasurer: Ray E. Minster
Controller and Secretary: Leonard J. Wrak
Director of Purchasing: to be named

Physical Plant
Director: David A. Hallbach

General University
Alumni Association
Executive Director: Joseph W. Meyer

Intercollegiate Athletics for Men
Director: Charles W. Eiden

Intercollegiate Athletics for Women
Director: Christian Grace

University of Iowa Foundation
Executive Director: Donald B. Wyrick
Residence

720-1. (A)(262) Classification of residents and nonresidents for admission and fee purposes.

1.4(1) General.

Students attending at least three times per week shall be classified as resident or nonresident for admission, fee and tuition purposes by the registrar. The registration shall be based upon information furnished by the student and all other available information. The register is authorized to acquire such written statements, affidavits, references or other evidence necessary to establish the domicile or residence of a student, including proof of registration, adoption, proof of custody or appointment at a guardian. The written statement of a student is exempt from paying the nonresident fee only if the student is a veteran.

For purposes of resident or nonresident classification, the term "property" shall include legal guardians or other parties in loco parentis of a minor student whose parent is in other countries where lawful for any application for admission or residence in the state other than actual parent.

1.4(2) Residence for tuition purposes.

Rules regarding residence for admission, fee and tuition purposes are generally divided into two categories: those that apply to a student who has resided in Iowa for at least eight and those who have resided in Iowa for less than eight years. The requirements in these categories are different. "Residence within the state means acceptance of the state as a fixed and permanent home and typical personal presence within the state. The two categories are discussed in more detail below.

1.4(3) Students who are minors.

The residence of a minor shall follow that of the parents at all times, except in those cases where emancipation has been granted by juvenile court. The residence of the father or his domicile, or the domicile of the residing mother, is the residence of the emancipated minor, but if the father and the mother have separate places of residence, the minor takes the residence of the parent with whom the child resides after his birth.

The place of residence of a minor specified in this sub-paragraph shall be considered residence of Iowa only if they have been domiciled within the state at the time of the beginning of the semester, quarter or session in which the minor is first enrolled in an Iowa public school or a private school in Iowa. All persons interested in the classification of residence of a student in Iowa shall observe this provision of this rule.

A minor admitted before his or her sixteenth birthday has not been domiciled within the state and has therefore not resided in Iowa.

1.4(4) Students who are eighteen years of age and married students under eighteen years of age.

A student eighteen years of age or older and a married student under eighteen years of age shall be classified as a resident if all the student's parents were residents of Iowa at the time the student reached majority or if the student is domiciled in another state, or (E) if the student is domiciled in another state, or (F) if the student is domiciled in another state, or (G) if the student is domiciled in another state, or (H) if the student is domiciled in another state, or (I) if the student is domiciled in another state, or (J) if the student is domiciled in another state, or (K) if the student is domiciled in another state, or (L) if the student is domiciled in another state, or (M) if the student is domiciled in another state, or (N) if the student is domiciled in another state, or (O) if the student is domiciled in another state, or (P) if the student is domiciled in another state, or (Q) if the student is domiciled in another state, or (R) if the student is domiciled in another state, or (S) if the student is domiciled in another state, or (T) if the student is domiciled in another state, or (U) if the student is domiciled in another state, or (V) if the student is domiciled in another state, or (W) if the student is domiciled in another state, or (X) if the student is domiciled in another state, or (Y) if the student is domiciled in another state, or (Z) if the student is domiciled in another state.

1.4(5) General Facts.

The standards for admission, fee and tuition purposes of a married student shall usually be determined under rules relating to the classification of the student. Married students under eighteen years of age shall be considered to have attended majority of the time of the time of marriage.

Persons who are married may be classified as residents in the state for the purpose of fee and tuition purposes of the student.

1.4(6) Guidelines.

The following guidelines are used in determining the residence classification of a student.

1. Accept the student's statement claiming emancipation unless required to file any other affidavit or evidence.

2. Accept the student's statement claiming emancipation unless required to file any other affidavit or evidence.

3. Accept the student's statement claiming emancipation unless required to file any other affidavit or evidence.

4. Accept the student's statement claiming emancipation unless required to file any other affidavit or evidence.

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60. Accept the student's statement claiming emancipation unless required to file any other affidavit or evidence.
Admission of undergraduate students by transfer from other colleges.

1.2(C) Students from accredited colleges and universities.

Transfer in good standing are given full credit for all courses or credits accepted by the North Central Association of Colleges and Secondary Schools or similar regional accreditation bodies. The student is required to carry a cumulative grade point average of 2.0 on a 4.0 scale. The student must also submit a letter from the president of the transferring college certifying that the student is in good academic standing and has not been suspended or expelled by the transferring institution.

Applicants for transfer from another institution must have a cumulative grade point average of 2.0 on a 4.0 scale. The student must also submit a letter from the president of the transferring college certifying that the student is in good academic standing and has not been suspended or expelled by the transferring institution.

Admission by Transfer:

1.2(C) Students from nonaccredited colleges.

A college may refuse to accept a student from a nonaccredited college or university and to admit a student from another college or university.

The college may refuse to accept a student from another college or university and to admit a student from another college or university.

Application deadlines:

1.2(C) Application deadlines.

Applications for admission must be submitted by the designated deadlines specified by the college. The college may require additional information, such as a copy of the student's high school transcript, a letter of recommendation, or an essay, in order to process the application.

The college may require additional information, such as a copy of the student's high school transcript, a letter of recommendation, or an essay, in order to process the application.

Program entrance:

The deadline for the submission of applications is 10 days prior to the beginning of the semester. The application fee for the semester in which the student is enrolled.

Supplemental Specific Rules for The University of Iowa

The following requirements are in addition to those given in The Graduate Catalog:

2.3(2) Formal application for admission.

All applications for admission to any college of The University of Iowa must satisfy a formal application for admission with the required official transcripts and other supporting materials as required by the dean of the college of admission. Students may be required to take the Graduate Record Examination or the Graduate Record Admission Test (GRE) in order to be considered for admission.

2.3(2) Parolee rule.

All students in parole in any college of The University of Iowa must submit a parolee application for admission with the required official transcripts and other supporting materials as required by the dean of the college of admission. Students may be required to take the Graduate Record Examination or the Graduate Record Admission Test (GRE) in order to be considered for admission.

2.3(1) Exemptions.

Students subject to the parole rule may request an exemption for the following reasons:

1. Actual local residence with parent, legal guardian, grandparent, aunt or uncle, or brother, or sister-in-law or step-sibling, or, in the case of students who are also students at another institution, the residence of the student and/or the residence of the parent or guardian.

2. Medical necessity certified in writing by a licensed physician, surgeon, or the public health authority of the university, which shall establish appropriate standards of proof for the determination of medical necessity.

3. Mandatory military obligation imposed by the authority of the United States or of any state of the United States, or by any time in the armed forces of the United States.

4. Actual local residence in a place of local residence is a reasonable distance from the student, where the student is required to reside and the residence of the parent or guardian is considered to be in the immediate area of the student's local residence.

5. The student satisfies the requirements of the United States for the purpose of serving in the armed forces of the United States.

6. The student satisfies the requirements of the United States for the purpose of serving in the armed forces of the United States.
2.23) Review.
A student approved by an upper division with respect to the administration of the program may require an administrative review of the decisions by the University. Such request shall be made in writing and shall state with particularity the reasons therefor. Pending administrative review, the student's registration shall not be denied or canceled. After review, the decision of the University is final, subject to the student's right to appeal a review by the upper Board of Regents in accordance with procedures established by the Board. Unless otherwise provided by the Board, a student must be in compliance with the program rules as a condition of continued enrollment at the University pending Board action on the request for review.

2.24) Definitions.
As used herein, the following words shall mean:
- a. "University" means the State University of Iowa or the appropriate university as designated by the Board of Regents at any particular facility or function prescribed herein being designated.
- b. "Primary rule" means the condition of registration at the University established by prior action.
- c. "Freshman" student means any college student registered for nine or more semester hours who has not previously earned thirty-two or more semester hours of credit toward a baccalaureate degree in the University. Prior semesters of residence in the University.
- d. "Sophomore" student means any undergraduate student registered for nine or more semester hours who has previously earned fifty-six or more semester hours of credit toward a baccalaureate degree in the University. Prior semesters of residence in the University.
- e. "Junior" student means any undergraduate student registered for nine or more semester hours who has previously earned eighty-four or more semester hours of credit toward a baccalaureate degree in the University. Prior semesters of residence in the University.
- f. "Senior" student means any undergraduate student registered for nine or more semester hours who has previously earned one hundred sixty-eight or more semester hours of credit toward a baccalaureate degree in the University. Prior semesters of residence in the University.

720—2.3.020 College of Business Administration.

2.31) Application for admission.
Applications for admission to the College of Business Administration shall be submitted to the director of admission.
Applications are requested to apply as early as possible, since this will give the student's admission heritage time to develop their applications. All applications will be reviewed and will be arranged for the opening date of next term.

2.32) Requirements for admission.
For admission to the College of Business Administration as an major, the student must have a.
- a. A minimum of 3.0 grade point average on all college courses, and in at least ten college courses under the College of Business Administration.
- b. A minimum grade of B on the University of the student's application.
- c. Completion of a satisfactory grade point average in all college courses, and at least ten college courses under the College of Business Administration.
- d. Completion of a satisfactory grade point average in the College of Business Administration.
- e. Completion of a satisfactory grade point average in the College of Business Administration, and a minimum grade of B on the University of the student's application.

2.4.1) Application for admission.
Address of inquiries regarding admission to the Director of Admissions, University of Iowa.

2.4.2) Advanced standing.
Applications for admission as advanced standings are handled at individual levels.

720—2.4.260 College of Dentistry.

2.4.1) Application for admission.
Address of inquiries regarding admission to the Dean of Admissions, University of Iowa.

2.5) Administration of freshman students.
The applications shall be submitted to the Dean of Admissions and must have the following school or college certification:
- a. The student shall have a minimum grade of B on the University of the student's application.
- b. The student shall have a minimum grade of B on the University of the student's application.
- c. The student shall have a minimum grade of B on the University of the student's application.
- d. The student shall have a minimum grade of B on the University of the student's application.

Each applicant must have attended at least one semester of the University of the University required
admissions examinations, maintained a satisfactory cumulative grade-point average, achieved satisfactory rank in graduation class and successfully completed all prerequisite courses. The University with the approval of the Board of Regents shall establish and periodically review specific minimum requirements for admission to the College of Engineering. Among the items to be determined are those that are, grade-point average, the number of prerequisite courses. These specific determinations will be published in the University catalog.

Applicants who do not meet minimum admission requirements, the Director of Admissions may offer a review of the applicant's record. (a) Admit conditionally for the number of credits needed to meet the minimum requirements. (b) Admit conditionally for the number of credits needed to meet the minimum requirements. (c) Admit conditionally for the number of credits needed to meet the minimum requirements.

2.5.2 Admission of undergraduate students by transfer.
The applicant must submit a formal application and official transcript of college work. Each applicant must have:
- Maintained satisfactory progress in high school attendance.
- Satisfactory academic progress on the University's minimum academic standards.
- Maintained a satisfactory cumulative grade-point average of all college work undertaken.

Admissions for students who do not meet the above requirements, the Director of Admissions will review individual records and may offer preliminary admission.

[Final March 21, 1965, amended March 10, 1966]

2.7.0-2.8.29(2) Graduate College.
Graduates of any college or university accredited by a recognized accrediting association or institution may, if the student is enrolled in a college of graduate study in the University, be admitted as a candidate for a Master's or Doctoral degree. The candidate must then be evaluated on the basis of the candidate's graduate work and approval by the dean of the Graduate College. The candidate must then be admitted as a graduate student in the University.

2.7.0-2.7.24(2) College of Law.
2.7.1 Application for admission.
Applicants to the College of Law for admission as a first-year student must be a resident of the State of Iowa or shall have a home in the state prior to taking the bar examination. The College of Law requires that applicants for admission must take an LSAT before the end of their first year in the College of Law.

To be considered for admission, an applicant should have satisfied the following criteria:
- A baccalaureate degree from a regionally accredited college or university in any area.
- A minimum of 2.5 GPA in undergraduate work.
- A strong commitment to public service.

Admissions for applicants with a baccalaureate degree from an accredited college or university is determined by the Director of Admissions. The applicant should submit the following materials:
- A completed application form.
- Official transcripts from all college work undertaken.
- A personal statement.
- Three letters of recommendation.

Admissions for applicants without a baccalaureate degree from an accredited college or university is determined by the Director of Admissions. The applicant should submit the following materials:
- A completed application form.
- Official transcripts from all college work undertaken.
- A personal statement.
- Three letters of recommendation.

2.7.2 Admission with advanced standing.
A student who has completed advanced standing courses shall be admitted if the student has satisfactorily completed the following requirements.
- A minimum of 90 semester hours of college credit.
- A minimum of 60 semester hours of college credit in the field of study.
- A cumulative grade-point average of 3.0 or better.

Admission with advanced standing is contingent upon the approval of the College of Law. The policy of the College of Law is to admit students who have completed at least 90 semester hours of college credit with a cumulative grade-point average of 3.0 or better.

The committee on admissions in advanced standing will decide in each case whether examinations in the various subjects will be required.

Applications will be considered only upon receipt of a statement from the dean or registrar of the college from which the applicant comes, showing the actual amount of time the student has spent in the study of pharmacy. The courses taken and the grades received, together with a statement of the work properly to entering upon the course in medicine.

No advanced standing will be granted to students from other than approved medical schools. Students may be granted advanced credit upon recommendation of the head of the department concerned for work taken in other than medical schools.

2.8.3) Unclassified students.

Applicants for admission to the College of Medicine who are not candidates for a degree but who desire credit for special subjects will be admitted to any lecture or laboratory course only upon complying with the regular requirements for admission to such course, or by action of the faculty upon recommendation of the professor in charge of the course.


2.9-2.9(282) College of Nursing.

Applications for admission to the College of Nursing should be submitted to the Dean in the following manner. All applicants for admission must meet the minimum academic requirements for admission to the College of Pharmacy.

The Dean of Admissions shall provide a list of all applicants so qualified.

2.10(6) College of Pharmacy.

2.10(1) General basis for admission.

Fulfillment of the specific requirements for admission does not insure admission to the College of Pharmacy. From the applicants meeting the specific requirements, the admissions committee will select those applicants who are most qualified.

Applications for admission to the College of Pharmacy should be received from approved high schools or have an equivalent amount of training.

7.10(3) College work.

The college work as outlined below will meet the minimum academic requirements for admission to the College of Pharmacy. The minimum shall include thirty-two semester hours of college-level work including at least in chemistry and physics and a four-year course of study as specified.

2.10(3) Scholarship and application deadline.

To be considered for admission to the College of Pharmacy, the student must have earned a 3.0 or "B" average as of college-year 2. The minimum grade-point average of 3.0 is based on the last three years' work of the student.

2.10(4) Required subjects.

Applications for admission are required to the American College Testing Program.

2.10(5) Current requirements.

Applicants who have completed work in a College of Pharmacy accredited by the American Council on Pharmaceutical Education may, if their college academic average is acceptable, be admitted and given advanced standing toward the degree of Bachelor of Science in Pharmacy.

2.11(282) College of Liberal Arts.

Applicants for admission to the College of Liberal Arts must meet the requirements that are common to the state institutions in Iowa as laid out in 1.2.10(2), 1.2.3(2), and 1.2.5(2).

2.12(282) College of Education.

Students at the University during preclinical work in education are registered in the College of Liberal Arts of the University. Requirements for permission to take teacher-training courses are listed in the University Catalog.
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