The University of Iowa General Catalog 1978-80

University of Iowa

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The University of Iowa
General Catalog 1978-80

New Series No. 2132
August 1, 1978

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# University Calendar

<table>
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<tr>
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<th>1978-79</th>
<th>1979-80</th>
</tr>
</thead>
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<tr>
<td><strong>First Semester</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advising and counseling</td>
<td>August 28</td>
<td>August 27</td>
</tr>
<tr>
<td>Registration begins</td>
<td>August 29</td>
<td>August 28</td>
</tr>
<tr>
<td>Classes begin</td>
<td>August 31</td>
<td>August 30</td>
</tr>
<tr>
<td>University holiday</td>
<td>September 4</td>
<td>September 3</td>
</tr>
<tr>
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<td>October 28</td>
<td></td>
</tr>
<tr>
<td>Thanksgiving recess</td>
<td>November 22</td>
<td>November 21</td>
</tr>
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<td>University holiday</td>
<td>November 23</td>
<td>November 22</td>
</tr>
<tr>
<td>Classes resume</td>
<td>November 24</td>
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</tr>
<tr>
<td>Classes end</td>
<td>November 27</td>
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</tr>
<tr>
<td>Examination Week begins</td>
<td>December 18</td>
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</tr>
<tr>
<td>Examination Week ends</td>
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<td>Commencement</td>
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<td>Classes begin</td>
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<td>May 14</td>
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<td>University holiday</td>
<td>May 26</td>
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<td>1979</td>
<td>1980</td>
</tr>
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<td>Commencement</td>
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<td>Independent Study Unit opens for Law and Graduate students</td>
<td>July 30</td>
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The University of Iowa is one of Iowa's three state universitites. The core of the University is the College of Liberal Arts. Within the College there are eleven schools: Art and Art History, Journalism, Letters, Library Science, Music, Religion, and Social Work. The College of Liberal Arts is closely affiliated with the professional colleges of Business Administration, Dentistry, Education, Engineering, Law, Medicine, Nursing and Pharmacy, as well as with a Graduate College of some 5,000 students—all located on the University's single campus in Iowa City. Some faculty members from the University's professional colleges also teach undergraduate classes in the College of Liberal Arts, joining participation in an increasing number of multidisciplinary courses. Total enrollment at the U of I during 1977-78 was about 22,000 students.

Founded on February 25, 1847, The University of Iowa is the state's oldest institution of higher education. During its long history, the University has been innovative—and also has earned national and even international, prominence for many of its programs. For example:

- it established the first law school west of the Mississippi.
- it was the country's first institution of higher education to accept women and men on an equal basis (the year was 1862).
- it became the first university to accept creative work in lieu of the traditional academic thesis from graduate students in the arts.
- The U of I pioneered the now world-recognized Iowa Writers Workshop for creative literature (the Workshop was established as a formal program in the mid-1930s).
- The University is also recognized as the place where the field of speech pathology originated.

Many other departments in the University's ten colleges also have achieved significant accomplishments, including the IQ and growth of their teaching and research programs in such fields as space physics, expository writing, and the teaching of composition, and in graduate programs in speech, dramatic art and communication.

to cite just a few recent examples.

The U of I faculty includes some 1,500 full-time members, many of whom have achieved national and international reputations. Their effectiveness as teachers is significantly enhanced by involvement in published and scientific research. The U of I seeks to foster faculty vitality by maintaining a healthy balance between teaching and research, and between undergraduate and graduate professional instruction.

The University's undergraduate enrollment is about evenly divided between men and women students. Approximately ten out of five undergraduates are Iowa residents. The balance consists of students from all other 49 states and more than 70 foreign countries. About 65 percent of the University's entering freshmen had a "B" average or above in high school. Approximately 65 percent ranked in the upper half of their high school classes and about 27 percent ranked in the upper tenth.

The U of I offers a comprehensive program of student financial aid. Half of the University's students have some form of employment. One-fifth have education loans. One of ten undergraduate and one of five freshmen have scholarships. Most U of I scholarships are awarded on the basis of demonstrable financial need and academic excellence, with a small number of grants awarded solely for scholarly achievement.

Reflecting a growing trend toward lifelong learning, the University in recent years has substantially expanded educational programs both on- and off-campus for individuals who cannot enroll as regular full-time students. These "non-traditional" learning opportunities range from mini-courses, conferences, workshops, and continuing education programs for professionals to Saturday and Evening Classes offered on campus and off-campus courses taught off campus. In 1977 the U of I, in cooperation with Iowa's other two state universities, inaugurated a new Bachelor of Liberal Studies (B.L.S.) degree program geared specifically to adults who wish to earn a college degree but are unable to enroll in traditional on-campus study.
Degree Programs
The University offers the following degrees. The major fields are listed in the various college sections of the Catalog.
Bachelor of Arts, Bachelor of Science, Bachelor of Music, Bachelor of Fine Arts, Bachelor of General Studies, Bachelor of Liberal Studies, Bachelor of Business Administration, Bachelor of Science in Engineering, Bachelor of Science in Chemical Engineering, Bachelor of Science in Civil Engineering, Bachelor of Science in Electrical Engineering, Bachelor of Science in Industrial Engineering, Bachelor of Science in Mechanical Engineering, Bachelor of Science in Pharmacy, Bachelor of Science in Nursing, Doctor of Dental Surgery, Juris Doctor, Doctor of Medicine, Master of Arts, Master of Science, Master of Business Administration, Master of Fine Arts, Master of Social Work, Master of Arts in Teaching, Education Specialist, Master of Comparative Law, Doctor of Musical Arts, and Doctor of Philosophy.

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 Northwestem, Indiana, Purdue, Ohio State, and Michigan State universities, and the universities of Minnesota, Wisconsin, and Michigan in the Western Conference. It is associated with those "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:

Code of Student Life
As members of the academic community, students are encouraged to develop a capacity for critical judgment and to engage in activities that reflect the search for truth. The tendency to learn and the freedom to teach depend upon appropriate appreciation and sanctions in the classroom, on the campus, and in the larger community. Students are expected to respect the general conditions conducive to such freedoms. Accordingly, the University has developed a Code of Student Life that is intended to provide and safeguard the right of each individual student to exercise fully his or her freedom to learn without undue interference by others. This Code applies only to student misconduct which adversely affects some University program or function or some other student and/or student interest of the University as an academic community. Students are expected to acquaint themselves with the Code and to conduct themselves in accordance with the standards it sets forth.

Human Rights
The University is guided by the principle 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 classification that deprives 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 the employment of faculty and staff personnel. The University works cooperatively with the community in furthering this principle.

University Marking System

<table>
<thead>
<tr>
<th>Mark Definition</th>
<th>Grade Points</th>
<th>Semester Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>B+ above average</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>B+ average</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>B+ below average</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>H* above average</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P* no grade +unlimited</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P* passing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R* audit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S* satisfactory</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
U* unsatisfactory
W* withdrawn

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

<table>
<thead>
<tr>
<th>Highest Distinction</th>
<th>Pharmacy</th>
<th>Other Colleges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distinction</td>
<td>3.75 - 4.0</td>
<td>highest 4%</td>
</tr>
<tr>
<td>High distinction</td>
<td>3.50 - 3.74</td>
<td>next highest 3%</td>
</tr>
<tr>
<td>Distinction</td>
<td>3.00 - 3.49</td>
<td>next highest 3%</td>
</tr>
</tbody>
</table>

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

Honorary and Professional Societies
Phi Beta Kappa, Sigma Xi, Mortar Board, and Omicron Delta Kappa are among 84 national honorary and professional societies in which The University of Iowa has active chapters.

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 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. The criteria may be found under "Iowa Administrative Code: Board of Regents" at the back of the Catalog.

Application Deadlines
Applicants for admission must submit the required application documents to the Office of Admissions by the deadline date listed below. Foreign students usually have earlier application deadlines (see "Foreign Students" below).

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
December 1—Fall Semester only

College of Engineering
Ten days before Registration begins—All sessions

Graduate College
The following are general Graduate College deadlines. Some departments may have earlier deadlines. Early submission of materials is advised. To be considered for graduate awards, the students must apply by February 1 for the Fall semester, May 1 for Summer Session, July 15 for Fall Semester, December 1 for Spring Semester.

College of Law
March 1—Summer Semester and Fall Semester

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

Physical Therapy Program
February 1—Fall Semester only

Physician's Assistant Program
January 15—Fall Semester only

Teacher Education Program
May 1 preceding the academic year in which student plans to enroll in professional education courses

Foreign Students
The University of Iowa encourages foreign students to begin the process of applying for admission at least twelve months prior to matriculation. The applicant should have satisfied all the application procedures and submitted his/her complete application file to the Admissions Office by the dates given:

Graduate College
Those applying to The University of Iowa for financial assistance (scholarships, fellowships, assistantships) must:
February 1—Summer Session or Fall Semester
October 1—Spring Semester

Students who will not require University financial support:
March 1—Summer Session
April 1—Fall Semester
October 1—Spring Semester
Graduate and Professional College Examinations

Prospective Graduate College applicants should take the Graduate Record Examination (GRE) Aptitude Test or, if applying for admission to a department of the College of Business Administration other than Decision Sciences, the Graduate Management Admission Test (GMAT). Prospective students of 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. Iowa 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 incoming students submit physical examination reports and personal health histories on the forms provided for that purpose. This information does not affect the student's admittance and is exclusively for the use of Student Health Service as necessary background for attempting to meet 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>Year</th>
<th>Undergraduate</th>
<th>Graduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/08</td>
<td>773</td>
<td>970</td>
</tr>
<tr>
<td>72</td>
<td>72</td>
<td>85</td>
</tr>
<tr>
<td>104</td>
<td>104</td>
<td>118</td>
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<tr>
<td>138</td>
<td>138</td>
<td>177</td>
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<tr>
<td>200</td>
<td>200</td>
<td>288</td>
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<td>230</td>
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<td>294</td>
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<td>320</td>
<td>320</td>
<td>412</td>
</tr>
<tr>
<td>540</td>
<td>540</td>
<td>699</td>
</tr>
<tr>
<td>12</td>
<td>12</td>
<td>15.9</td>
</tr>
</tbody>
</table>

*All hours and fees

Extension courses $26 per semester hour.
Correspondence courses $52 per semester hour.
General fees provide for the student's use of Iowa Memorial Union facilities, and of libraries, laboratories, and gymnasium; free admission to minor sports events and to student-faculty concerts and plays, reduced rates for admission to major sports events and to performances by visiting stage and concert artists; 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 lowest credits for which the course is available that semester.

Procedure for Payment of Student Accounts
Tuition and fees, board, room, and other University residency hall or fraternity-aeaternity housing expenses, and such incidental University expenses as library and parking fines, are payable on an installment basis, with Billing due at the first of September, October and November for the fall semester, and the first of February, March, and April for the spring semester. Students who become delinquent on the 15th of the month are reported to the Registrar for cancellation of registration. There is a $210 fee for reinstatement.

Refund Schedule
Students who cancel their registration during the regular semester may receive reduction of fees assessed as follows: regular semester—first week of fees—40%, second week—75%, during the third week—50%. There is
No reduction of fees for cancellations after the third week of classes.

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 "2.1" is the code for the course numbered 1 in the Department of Botany (2), entitled "Introduction to Botany." 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."
Services for Students

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

The Action Studies Program
Patterned after the "free university" concept, the Action Studies Program provides a vehicle to immediate response to student demand for courses currently in use, 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 course is generally open to anyone who is interested in the course. Courses taken for credit earn credit toward the degree. Most of the courses in the Action Studies Program run concurrently with the regular University schedule. A catalog with course descriptions, times, and meeting places is printed every semester.

Admissions
All inquiries, transcripts, evaluations of transfer credits, and applications for admission into any college of the University should be directed to the Office of Admissions.

Career Services and Placement Center
Career Planning
Activities include help in developing realistic career plans, locating career alternatives, relating to major fields of study or interests, learning how to use career information and resources to expand awareness of career options and prepare to enter the work world. Assistance provided through individual career advising, workshops, career days,オリュス - and seminars, and a two credit course, "Making a Vocational Educational Choice."

Career Resource Center
The Career Resource Center offers assistance from professional advising staff, collection of career pamphlets and tapes, job search kits, education directories, and employer files.

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 freshman year. Cooperative education positions are filled on a competitive basis with participating employers making the final selections from among the student candidates.

Placement
Job placement assistance is provided for all seniors and graduate students seeking employment in business, industry, government, and nonprofit agencies. Activities include individual contacts with professional placement advisors, seminars for developing job hunting interviewing skills, on-campus interviews with prospective employers, information on employment fairs for college graduates, background check on employers, and on-campus job opportunities. (Also see "College of Engineering" and "College of Education" for placement seeking these colleges offer.)

Counseling Service
University Counseling Service offers vocational, educational, and personal counseling.
therapy through individual or group sessions. It also offers a number of programs, workshops, and consultation activities. All services are available to students without cost. Faculty and staff are eligible for limited services. University Counseling Service is staffed by psychologists and advance doctoral students.

**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 treatments rendered, and patients are expected to pay for their Master Charge cards.

**Evaluation and Examination Service**

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

It administers many of the University's required and optional tests for assessing students, and is also a center for many national testing programs, including the American College Test (ACT), Medical College Admission Test (MCAT), Graduate Record Examinations (GRE), Graduate Management Admissions Test (GMAT), Graduate Record for Foreign Language Test (GREFL), Law School Admission Test (LSAT), Test of English as a Foreign Language (TOEFL), Miller Analogies Test (MAT), and College-Level Examination Program (CLEP).

**Health Service**

The Student Health Service is located in the Children's Hospital in the University medical complex. All registered students at the University are eligible for outpatient care at the Student Health Clinic. There are charges for laboratory procedures, X rays and some special services. All students are advised to have health and accident insurance. If such coverage is not available under an existing family or group plan policy, a University-sponsored group insurance is available for individual students or as a family plan.

**High School-College Relations**

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

**Intercollegiate Athletics for Men**

The University is a member of the Western Intercollegiate Conference (Big Ten) and has athletic programs in football, basketball, track, baseball, swimming, golf, wrestling, tennis, cross-country and gymnastics. Operating policies and procedures of the Board of Control of Athletics, which is composed of 14 members from the University teaching and administrative staff, and University students, are representative of the University Staff Council and two students.

**Intercollegiate Athletics for Women**

Women's intercollegiate athletics at the University of Iowa include basketball, cross-country, field hockey, golf, gymnastics, softball, swimming, tennis, track and field, and volleyball. Athletic scholarships are available to talented female athletes in all sports.

The University is a state, regional and national member of the Association for Intercollegiate Athletics for Women (AIAW), and fully supports its efforts in state, regional and national AIAW competitions.

Regularly scheduled competition includes other Big Ten universities. Through the Women's Intercollegiate Sports Committee, each student athlete has a voice in the determination of Women's Athletic Department policies. The voting membership of the committee comprises a team representative in each sport, a student-elect president, and the women's athletic director.

**International Education and Services (OIES)**

The OIES assists American students who wish to study, travel, or work abroad, and counsels foreign students who wish to study at the University. The Foreign Student Advisers in the OIES promote and facilitate interaction between American and foreign students and international. They also provide information, education, and counseling for the over 800 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.

**Intramural Sports and Recreational Activities**

Through the University's Division of Intramural 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").

**Overseas Study and Travel Abroad**

The Office of Overseas Study and Travel Abroad serves the University of Iowa students who wish to study, work, or travel abroad. Its extensive pre-travel collection provides information on study abroad programs offered by the University and by foreign or overseas institutions of higher learning as well as material on foreign universities and special collections, volunteer work, student flights and land travel.
The Office gives students individual counseling on study abroad programs which will complement their on-campus academic programs; assists them in obtaining correct credit assignments for foreign study; and provides current information on overseas conditions, health regulations, customs and duties, and as aspects of foreign travel. The International Student Identity Card may be obtained in this office.

Iowa Memorial Union

The Union is the center of University co-curricular activities. It houses the Student Activities Center, University Outdining Service, Career Services and Placement Center, and Campus Information Center. Its facilities include a variety of food services, a bowling and ballroom area, a theater shop, a creative arts center, a bookstore, a sundries shop, a television lounge, reading rooms, studios for lectures and concerts, and art and sculpture display areas. And, in the adjoining Iowa House, 108 guest rooms for parents, alumni, and workshop participants, and other visitors to the campus.

Orientation Office

With the aid of representative student, faculty and staff personnel, the Orientation Office designs and conducts a wide variety of programs to help new students—freshmen, transfer and graduate—with as many of their how-to-live here-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 at the Pheticn Office provides a variety of individualized and class instruction for any University student who wish to improve their college-level reading performance. Students are asked to identify 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 reading skills, comprehension, vocabulary, concentration, reading rate and increased rate of reading.

The Reading Lab offers one service course, Voluntary Reading Lab, which meets twice a week for 12 weeks. Students may attend more or less often if they wish, and they attend at any point during that time if they feel they need reading help. The lab carries no credit and assigns no grade. Ordinarily, no outside assignments are given. Developmental reading work is restricted to Lab hours, and makes extensive use of Lab materials and the student's own texts in other courses.

The Lab may offer five for-credit courses: 10.6 Rhetic, for students who need exceptional help preparing for college-level reading; 20.2 Advanced Reading Comprehension, 20.3 Rhetoric Reading, and 40.4 Practical College Vocabulary. Independent five-week module courses for one seminar hour of credit each and 20.3 Teaching in a Reading Laboratory.

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 student's academic records and official transcripts. It assigns students in determining graduation requirements, processing applications for degrees, and interpreting college and University academic regulations; provides assistance to students concerning Selective Service and military service matters; and helps students with University application and enrollment procedures, and receipt of Veteran Administration benefits.

Special Support Services

The Developmental Support Services (DSS) was established to provide for successful students from economically and educationally disadvantaged or minority background to receive a higher education at the University of Iowa. Special Support Services provides academic, financial, and personal assistance programs.

Special Support Services is made up of the following subprograms: The Upward Bound Project of Under-Represented Educational Opportunities Program: New Dimensions in Learning. The Educational Opportunities Professional and Graduation Programs; the

All-American Cultural Center; and the Chicano-American Cultural Center.

Speech and Hearing Clinic

This University offers Iowa Speech and Hearing Center for the deaf, speech-language, and hearing problems. Any University student may receive needed services without charge. Services include diagnostic examination, consultations, individual clinic sessions, small group sessions and referrals to other clinics as needed.

Division of Sponsored Programs

The Division of Sponsored Programs maintains a Residence Center, which contains information on federal and supplemental sources of funding for study and research projects for faculty and graduate students. Graduate students may inquire about funds for advanced study, either in the United States or abroad. The Division also distributes a weekly newsletter, a research and Graduate News, which contains programs and deadlines information and carries a special section devoted to graduate fellowships. These newsletters are available at departmental offices; further inquiries about these opportunities are welcome at the Research Center. In some instances, the Center provides direct assistance with application for graduate fellowships, as is the case with graduate fellowships authorized under the Fulbright-Hays Act, with the Tuningen Exchange Scholarships, and with dissertation support applications to fellowships agencies in the United States.

Student Activities

Members of the Student Activities staff work with students in organized interest groups, helping them form or developing new organizations, discussing active in existing organizations, improving the quality of organizations. Student Activities offers the ability to program planning, planning, budgeting, membership recruitment, decision-making, group development, and other aspects of organizational management. Through the College of Education's Division of Counselor Education, Student Activities offers a three-credit course in Management and Motivation in Organizations and Activities, for leaders and members of student organizations. Student Activities also offers min-courses to

SERVICES FOR STUDENTS

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meet student organizational needs at their request. The Student Activities Center in the Iowa Memorial Union provides typewriters, duplicators, and mimeograph machines, a duplicating center, a photocopy, free telephones, and office supply purchasing services for use by recognized student organizations. The Student Activities Resource Center contains readings related to personal growth and organizational development.

Transcripts

Students who have completed work at the University of Iowa may obtain an official transcript of that work upon request to the Office of the Registrar. Fees are $2 for the first copy, $1 each for the second through fifth, $2 cents each beyond the fifth. An official transcript cannot be issued for a student who has a past-due university account.

Veterans' Services

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

Women's Resource and Action Center

The Women's Resource and Action Center (WRAC) provides services to meet the academic, vocational, and personal needs of women. Its staff acts as a resource for many women's organizations; sponsors numerous cultural programs, lectures, support groups, and consciousness-raising groups; sponsors a Brown Bag Luncheon program featuring women speakers from the community and the University; and publishes a monthly WIRC Newsletter. The WRAC houses the Spurrier Truth Women's Resource Library, and maintains a three-volume reference catalog. The WRAC's Rape Victim Advocacy program provides a 24-hour telephone service for emergency advice and counseling. It is active in preventive education and maintains information and speaker bureaus.

Writing Lab

The Lab offers individual instruction in writing to any university student. Each participating student's own writing is the center of the course for every person. The teacher responds to what each person writes, and, in small group conferences, helps him or her identify and overcome particular writing problems.

Any student who believes he or she cannot do the writing expected in the required freshman course may confer with the director of the Lab about taking individual instruction in writing for credit (1096 Rhetoric), before registering for the required course. Non-credit students may enroll throughout the semester.
University 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, according to students who normally would have completed three years at the college level, or to qualify for specific exemptions. Exemption criteria are outlined in the separate rule brochure available from the University Housing Assignment Office. Burge Hall, The University of Iowa, Iowa City, Iowa 52242. Exemption requests must be received by the University Housing Assignment Office at least 30 days before the deadline for which the exemption is required. Exemption request forms are available from the University Housing Assignment 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 housing facilities shall be open to all, as an equal opportunity to secure housing without discrimination on the basis of race, creed, color or national origin."

Iowa City has a fair-housing ordinance prohibiting for equal-opportunity to secure housing without discrimination based on race, religion or ancestry, except in certain instances involving owner-occupied dwelling units. A Human Relations Commission is responsible for the observance of this ordinance and for the investigation of 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 quad room rooms with full or partial board are available in the Grand Avenue Residence Halls (west campus), Harrelson, Northrup, Playwell, South Quadangle, Rinehart and Slater halls, and in the Clinton Street Residence Halls (east campus). which include Burge Hall, Count Hall, Daum House and Stanley Hall. There are lounges, study rooms, browsing libraries and recreation rooms in each residence hall.

Each residence hall is divided into small living units. Each hall has a full-time head resident, with a student resident assistant in each living unit. All students are encouraged to participate in residence hall government at the unit, building, area or system level. Student and staff initiated programs and activities provide opportunities to pursue social, recreational, cultural and educational interests. Academic counseling is also available in residence halls.

Students not living in residence halls may contract for full or partial board.

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

Applications and Assignments

Prospective undergraduate students receive this application for admission a tentative 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 Assignment Office.

Applications for residence hall living are not considered until the applicant has been notified by the University.

Students are encouraged to choose their own roommates. Prospective roommates must request assignment together when they apply, preferably with both applications submitted at the same time. The assignment of roommates is not made until all of the prospective roommates' application materials have been received and both have been admitted to the University. The application last received by 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 Assignment Office in writing before the application becomes a binding contract. It becomes binding after June 1, if for the academic year, after September 1, if for the second semester only; after May 15, if for the summer session; or ten days after the University Housing Assignment Office receives notice of the acceptance of the contract and assignment of accommodations. If the notice is made within ten days before the beginning of registration, the contract becomes binding two weeks 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 1978-79 academic year are $1,438 for a single room and $1,308 for a triple, with tuition paid. 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 799 University-operated apartment accommodations available to married students in the Hawkeye Drive, Hawkeye Court, Hawkeye Park, and Parkview complexes.

Rents for 1978-79 ranged from $103 to $111 per month for one-bedroom units (with renter is only) available at the lower level to $137.50 for two-bedroom units, not including gas, electricity and telephone. 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 major and University admission requirements. Applications may be filed before completion of admission, but will not be accepted more than a year in advance.

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

Off-Campus Housing

The Housing Clearinghouse, located at the Campus Information Center in the Iowa Memorial Union, maintains and provides accurate up-to-date listings of available rent units in the Iowa City area—large apartment complexes, smaller complexes, rooms in private homes, and one, two, and three-bedroom duplexes and houses. The Clearinghouse also suggests other resources to use in looking for housing and offers a packet of helpful information for prospective residents of the area.

Fraternities

Nineteen undergraduate and six professional fraternity chapters house at least 14 national sororities active at Iowa are Alpha Chi Omega, Alpha Delta Pi, 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 Sigma Tau Alpha.

Sororities
Financial Aid

All financial assistance available to University of Iowa students from general University sources is administered by the Office of Student Financial Aid. Assistance is provided through scholarships, grants, loans, and part-time job placement. A student seeking assistance must first complete University admission procedures, including the American College Test, and submit a parent's financial statement through College Scholarship Service, Box 3460, Berkeley, California 94701, or ACT Financial Aid Services, Box 1050, Iowa City, Iowa 52240. When a copy of the parents' statement is received, the Office of Student Financial Aid will supply forms and instructions for applying for aid at Iowa. Only one application is necessary each year for all forms of assistance administered by the Office of Student Financial Aid. Application 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. Upperclassmen and transfer students must have a 3.00 cumulative grade-point average for the total scholarship year, and must maintain at least a 2.75 to continue the scholarship.

Freshman/Transfer Merit Award

Entering students may receive this recognition for meeting specific academic criteria. These scholarships are available to entering freshmen eligible for the University of Iowa Honors Program (28 or greater ACT composite and ranking in the upper quarter of their high school graduating class), to transfer students graduating in the upper one percent of their high school class, and to transfers with a 3.25 or greater GPA. The award is $150. No separate application is required; eligibility is determined from the admission application.

Basic Educational Opportunity Grants

The maximum BEOG is $1800 minus the amount of computed family contribution. Application is made through either the OAS or ACT financial statement or by obtaining a Basic Grant application form from any high school counselor's, college financial aid, or public office.

Supplemental Educational Opportunity Grant

Available to a limited number of under-graduate students unable to afford college without such assistance, BEOG grants range from $200 to $1500 a year but cannot exceed one-half of the recipient's total assistance. There are no specific academic requirements for an EOG grant, but the applicant must show academic or creative promise.

National Direct Loan Fund

This is the University's largest source for long-term educational loans. Undergraduate students may borrow up to $1,000 per year and $5,000 total; 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. An undergraduate must be in good academic standing and be making normal progress toward a degree. The applicant cannot be in default or delinquency on a previous loan. No interest is charged while the borrower is at least a half-time student. Loans are repayable in three percent, level 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 or a Direct 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 a degree in one of the following fields:

- Medicine
- Dentistry
- Optometry
- Podiatry
- Veterinary medicine
- Pharmacy and/or nursing

... in need of financial assistance to pursue their course of study. In addition, health professions students must be full-time students, and nursing students must be registered at least half-time. Repayment of the loan portion is arranged with the school at the time of graduation or at the time the student ceases to be a full-time student.

Law Enforcement Education Program

This program contains federally-funded loans and grants. Loans can be up to $2,200 per year, and grants can be for a maximum of $4,000 per semester to be used for actual costs of tuition and books. To be eligible for the loan program, a participating school must have more than 15 hours of courses directly related to law enforcement. All participating schools are eligible for grants. The program is available to pre-service and in-service law enforcement personnel, although grants are limited to in-service personnel. A recipient can be either a full- or part-time student. Cancellation provisions are available with the loan program.

Guaranteed Loans

Undergraduates may borrow a maximum of $2,100 and graduates $5,000 per year. Money may be borrowed through commercial banks, credit unions, savings and loan associations, and other eligible lending institutions. Repayment begins when the student ceases to be at least a half-time student.

University Loan Funds

Short-term loans up to $500 are available for school-year expenses. To qualify, the applicant must have a minimum 2.0 High School and transfer grade-point average, and a 1.8 University average.

Part-Time Jobs

Most University students who take part-time jobs secure them through the Office of Student Financial Aid. The most numerous opportunities are in University Food Service and Hospitals. Hours range from 10 to 20 a week; for beginning students, the University recommends no more than 12 hours per week.

Work-Study

Part-time work available through the Office of Student Financial Aid is provided under the Federal College Work-Study Program. The purpose of which is to expand job opportunities for those who must earn a part of their educational expenses not covered by other assistance. Work-Study employees may work an average of 20 hours a week throughout each academic session. As far as possible, work-Study jobs are arranged to give employees work experience related to their educational goals.

Scholarships, Fellowships, Assistantships

A separate publication listing scholarships, loans, awards and prizes available to students in the various colleges of the University is available upon request from the Office of Admissions, 163 Calvin Hall.
The University of Iowa Health Center

The University of Iowa has a major role in the preparation of health professionals for Iowa and the nation. In the Health Center are found the academic programs, clinical facilities and service agencies involved in preparing students and practitioners to serve a wide spectrum of human health needs, ranging from basic first aid to the most advanced diagnostic and treatment procedures, and on to the search for enrich new knowledge, through research. As soon as they have acquired basic knowledge in their fields, health profession students begin to learn by doing, by following the examples and directions set forth by the skilled practitioners who teach as they diagnose, treat, prescribe, operate and otherwise care for patients. Thousands of individuals from the community, state and region receive direct health services through these processes. Thus the University of Iowa Health Center is simultaneously a center of learning and of service. It is one of the most advanced, comprehensive health science centers in the United States.

Many Health Center skills are shared off campus through cooperative programs with other Iowa colleges and community colleges, and through a variety of continuing education programs for health practitioners—many of whom also return to the Iowa campus to update their skills through conferences and workshops and "re-educators" conducted by the University of Iowa health science educators.

Programs, facilities and courses of the colleges of Dentistry, Medicine, Nursing and Pharmacy are listed elsewhere in this Catalog. Other Health Center units and related programs are described below.

University Hospitals and Clinics

Director and administrator is the president for health services. John W. Coffeen
Assistant director: Stephen L. Lowey
Assistant director for planning: Gail T. Peckham
Assistant director for clinical services: Douglas A. Halford
Assistant director for dental: John R. Hagen
Assistant director for medical research: Dr. Robert J. Brown
Clinical service heads: Anesthesiology, Dr. Howard G. Speck; cardiology, Dr. John S. Stearns; dermatology, Dr. Frank J. Mudasser; dentistry, Dr. John R. Hagen; family practice, Dr. Norman G. Frisch; medical genetics, Dr. James L. Wynn; neurology, Dr. Thomas W. Van Allen; obstetrics and gynecology, Dr. Ray W. Peterson; ophthalmology, Dr. F. C. Blatt; orthopedics, Dr. Reginald Cooper; otolaryngology and head and neck surgery, Dr. Donald K. Swanson; pathology, Dr. John R. Hagen; pediatrics, Dr. George S. Pringle; psychiatry, Dr. Richard L. Perlman; radiology, Dr. James H. Olson; surgery, Dr. Shirley A. Zeller; urology, Dr. David R. Caro

The University of Iowa Hospitals and Clinics is the nation's largest university-owned teaching hospital, and is dedicated to the concept of health science education through delivery of highly sophisticated, tertiary-level care to patients referred to the hospitals by physicians and dentists from throughout Iowa and the region. The institution is the hub of Iowa's health care delivery system in its role as a tertiary care center providing advanced diagnostic and therapeutic services.

University Hospitals and Clinics is the clinical basis of graduate and undergraduate studies for thousands of students in the health disciplines, including medicine, dentistry, nursing, pharmacy, hospital administration, physical therapy, occupational therapy, pastoral studies and social work.

University Hospitals and Clinics sponsors residency programs in which more than 400 physicians, dentists and pharmacists gain advanced clinical knowledge and skills in the health care specialties they have chosen to pursue. More than 80 other physicians is training at University Hospitals and Clinics are fellows—experienced clinicians who have advanced to subspecialty practice and research.

An integral part of The University of Iowa, University Hospitals and Clinics is governed by the Iowa State Board of Regents. Through the president of The University of Iowa, the Regents delegate the responsibility for the operation of the Hospitals to the director of University Hospitals, who also serves as assistant to the president for health services of the University.

The Hospitals' operation policies are established by the Hospital Advisory Committee, a group comprising the chiefs of
Highly specialized health services—e.g., the burn unit, heart catheterization facilities, neutron intensive care unit—are easily accessible to Iowans who reside in communities without such resources. To facilitate use of these and other specialized services, the Hospital operates a unique patient transportation service, with a fleet of 15 vehicles which travel nearly two million passenger-miles each year transporting 1,500 Iowans to and from University Hospitals and Clinics.

More than 4,000 Hospital staff members are involved each day in providing professional and support services needed to care for approximately 2,500 patients. The Hospital’s clinical staff is comprised of more than 315 faculty physicians and rotating residents assigned among the 16 clinical services. The Iowa Staff of University Hospitals numbers over 470 resident physicians and dentists. The Hospital Department of Nursing is staffed by 1,000 persons, more than half of whom are professional nurses.

Other Hospital staff members annually provide over 175,000 X-ray examinations and treatments, conduct over two million laboratory tests, fill more than one million prescription orders, render more than 29,000 physical therapy treatments and prepare nearly 27,000 food and component therapies.

New intensive care, cardiology and urology units have resulted from recent modernization efforts. A seven-story, $15 million North Tower Addition went into service in 1976, providing expanded and replacement facilities for surviving patient and outpatient services. The new $20 million Roy J. Carver Pavilion, named in honor of a $2 million gift from the Muscatine Industrial Association, provides replacement facilities for a multi-specialty suite and emergency treatment center, physical therapy department, pharmacy outpatient, clinic and faculty offices, and 146 beds to replace outmoded facilities in Children’s Hospital and Clinics Hospital.

University Hospitals and Clinics also collaborate in conducting multi-accredited health professional education programs: a nine-month Dietetic Internship Program; two-year Radiologic Technology, Medical Technology and Nuclear Medicine Technology programs; a two-year Physician’s Assistant Program; a two-year Hospital Pharmacy Residency Program; a two-year Physician Therapy Program; and, in conjunction with Mercy Hospital in Des Moines, a three-year Cytotechnology Trainee Program.

The University Hospitals and Clinics also provide a clinical setting where students in four health education programs offered by the University College in Cedar Rapids are provided supervised opportunities to apply and integrate knowledge, attitudes and skills learned in the classroom. These programs are one- and two-year programs in Nursing Education; a two-year Orthopedic Physician’s Assistant Program; a one-year Operating Room Technician Program; and a one-year Respiratory Therapy Program.

The Bureau of Dental Health Education

The Bureau of Dental Health Education is sponsored jointly by the Iowa State Department of Health, which provides personnel, salaries, and office supplies, and the University, which provides space and equipment.

The Bureau’s primary purpose is to provide a program of dental health education and disease-prevention in the public and parochial schools of the state. Senior dental hygiene students from the University conduct “Dentists” programs with the Public Health Dental Hygienists of the Iowa State Department of Health. These programs include instruction in oral hygiene, good dental health practices, and nutrition as related to dental health. A weekly fluoride rinsing instilled by a dental student is continued for the remainder of the year. Dental referral cards are also made available to schools to remind parents of the need for regular dental care for children.

Council on Speech Pathology and Audiology

The Council coordinates clinical services in speech pathology and audiology offered in the University of Iowa and the Veterans Administration Hospital.

Health Occupations Education

Through this program, the University collaborates with the State Department of Public Instruction in providing consulting and advisory services, conducting research and developing cur-
route and instructional material for health occupations programs conducted by the State of Iowa in 15 area community colleges, but also including a growing number of high schools. The Health Occupations Education staff also assists these institutions in staffing and conducting continuing education efforts, enrolling nearly 69,500 registrants in more than 3,400 courses each year.

Health Sciences Library

The Health Sciences Library serves the combined information and research needs of the colleges of Dentistry, Medicine, Nursing, and Pharmacy, and the Department of Speech Pathology and Audiology. The largest of the departmental university libraries, the Health Sciences Library contains over 150,000 volumes and receives more than 2,700 periodicals. In addition, it provides ample space for these collections, the interior allows for enough reading and study space to accommodate approximately 1,100 people. Special features of the Library range from computerized cataloging access to the latest health sciences literature via MEDLINE and other online databases to the rare books room (some dating back to the 16th century) in the John Martin Rare Book Room.

Health Services Research Center

Organizing topical research, education and demonstration projects relevant to the health needs of non-urban areas, the Center consists of a multidisciplinary core of scholars drawn from the Colleges of Medicine, Dentistry, Nursing, Pharmacy, Education, Engineering, Business Administration, various social science departments in the College of Liberal Arts, University Hospitals and Clinics, and the Veterans Administration Hospital. These individuals have a mutual interest in improving the health services delivery system in Iowa, the Midwest, and the nation as a whole.

Iowa Mental Health Authority

Authorized by Congress under Public Law 70-687 in 1946, the Iowa Mental Health Authority is a state agency affiliated with the University of Iowa College of Medicine and located at the University of Iowa Hospital Campus. The primary function of the Authority is to provide state-level support for Iowa's 32 community mental health centers, which are private nonprofit corporations. The Authority provides consultation, staff development, assistance in information management, standards development and evaluation, and research and support of services for these centers. The Authority conducts with communities about developing local services, performs liaison and referral activities with other local, state and federal programs in the mental health delivery system; and provides consultation on federal mental health legislation and staffing grants through the National Institute of Mental Health.

Oakdale Campus

Located seven miles northeast of the Health Center, the 325-acre Oakdale campus includes an alcoholism treatment unit, a psychology and pediatrics research laboratories, the Institute of Agricultural Medicine, research animal care facilities, a Model Child Care for Family Practitioners, a Model Rural Health Center and University House, which provides facilities and support for faculty research and curriculum development. Among the several policy institutes components of University House are the Health Services Research Center. Gerontology Center, and the Institute of Child Behavior and Development.

Psychiatric Hospital

Part of the University Hospitals system, the Psychiatric Hospital contains clinical and research laboratories in neuropsychology, biochemistry and psychology. The electroencephalographic laboratories are the only ones in the state. The psychiatric hospitals serve the entire University of Iowa Health Center.

State Hygienic Laboratory

Laboratory staff members perform a variety of diagnostic, surveillance, training and consulting functions in such areas as bacteriology, parasitology, industrial hygiene, serology, virology, health physics, pollution chemistry, chemistry, radiation and air pollution, serving waste analysis, pesticides and herbicides, toxicology, mineral analysis and disease surveillance. The laboratory provides virological and bacteriological diagnostic services for University Hospitals and Clinics and for the U of I Student Health Service.

State Services for Crippled Children

Children's services is supported by federal and state appropriations, and the University Hospital, State Services for Crippled Children (SSCC) provides a state-wide program of services for Iowa persons under the age of 21 with special health problems and multiple handicaps. Diagnostic and evaluation services are offered at all health services 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, Orthopaedic Surgery and Ophthalmology. Diagnostic services are also provided in the areas of speech pathology, audiology, clinical psychology, dermatology, and optometry.

Patient service staff members assist the children's families in making arrangements to obtain the care and treatment recommended at clinic and monitor their implementation. At the local level, SSCC maintains regional offices and participates in the development of community health centers.

The agency conducts research on hospital health problems related to handicaps, such as muscular dystrophy, mental retardation, phenylketonuria, and high risks of the newborn.

SSCC also sponsors a University of Iowa graduate training program in audiology and speech pathology and flight sites are set for the Department of Pediatrics.

University Hospital School

A University Affiliated Program dealing with the problems of developmentally disabled children and young adults, the Hospital School serves as the focus of activity for the Division of Developmental Disabilities within the Department of Pediatrics. It is an integral part of the tertiary-level health services available through University Hospitals and Clinics.

The interdisciplinary team approach provides services involving the fields of medicine, dentistry, nursing, nutrition, speech and language pathology, physical and occupational therapy, art, music therapy, psychology, social work, special
education, physical education, pre-
vocational and vocational activities.

Through general and specific diagnostic
clinics, individuals are evaluated, and
programs of education and therapy are
planned in conjunction with the pupil, the
Arlt Education Agency, and the local school
district.

The residential program provides a variety of
educational and therapeutic services for
children who are judged to require services
not available in the local community. The
goal of the program is to return the children
as quickly as possible to their home
communities and schools.

The day program provides special educa-
tion, therapy and functional training for
selected children and young adults who are
mentally retarded and who reside in the Iowa
City area.

Training activities include pre- and in-service
lectures, workshops, seminars and semin-
ers for a variety of care providers working in
other facilities or community programs.

These activities take place in the University
and community setting.

Close cooperation exists with the State
Developmental Disabilities Council and
other state agencies in providing training
and technical assistance to their programs.

The Child Development Clinic, serving the
learning-disabled child, the socially disrup-
tive child and family, and the child with
selected metabolic disorders, is an active
component of the Division.

The laboratories of the Division of Genetics
and Biochemistry are also housed in the
University Hospital (School of Medicine) and
are utilized extensively in its research, teaching
and service programs.

University Speech and
Hearing Clinic

Located in the Wendell Johnson Speech and
Hearing Center, the Speech and Hearing
Clinic provides training for students of the
Department of Speech Pathology and
Audiology. In addition to audiology and
speech pathology, the staff includes a
psychologist, and evaluations and consulta-
tions by physiagian and other health care
professionals can be arranged when appro-
priate.

The clinic provides out-clinic evaluation and
consultation services for individuals with
speech, language and/or hearing problems;
out-clinic habilitation or rehabilitation ser-
vice programs for persons who cannot come
to the Clinic for such services; and a Summer
Residential Program for children with

The Veterans Administration
Hospital

Medical students and residents receive
much of their clinical training at this 360-bed
hospital, which are based several of the
major facilities of the University's Health Center.
These include laboratories for the transplan-
tation program, highly specialized
laboratories in nuclear medicine, and special
units for the study of metabolic and
gastrointestinal diseases. The VA Hospital
also offers unique training opportunities in
the fields of clinical pharmacology, gastroen-
terology, cardiology, nephrology and applied
immunology.
Research Activities

The University recognizes that creative activity is an indispensable function if its teaching is to have the relevance, freshness and effectiveness expected of a distinguished institution of higher learning.

The University holds that the term "research" applies to creativity in all fields, imaginative originality, whether in the fine arts or in the sciences, is of a common character and significance in the overall intellectual life of the institution.

The Office of the Vice-President for Educational Development and Research maintains an overview of the many individual research commitments of the institution and actively promotes, in a variety of ways, the research mission of the University and the educational development efforts of the faculty. 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, as the faculty body, assists the Vice-President for Educational Development and Research in a regular advisory capacity. The Council consists of ten faculty members, one selected by a representative group of the University staff, and two students or students. Faculty members include two each from, the physical, biological and social sciences and the humanities, and four 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 Ph.D. theses and procedures concerned with selecting and allocating funds for support of research and creative activity, and additional matters relating 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 offices 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 Institutes of Health for the support of the initial research efforts of junior faculty (other than those in the colleges of Medicine and Dentistry) 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 purpose which will assist the faculty member in conducting an initial exploration of a hypothesis which he or she believes may lead to 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 cost of materials, supplies, equipment, professional training, travel 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 in visiting lectures.

Services

The Office of the Vice-President for Educational Development and Research also provides support for several University-wide services required for the faculty members engaged in research and creative activities. These include:
RESEARCH ACTIVITIES

Computing Center

The Gerad 9. Weeg Computing Center provides resources for computer computing facilities to all students, faculty, and staff of the University. The Center maintains systems capable of an extremely wide variety of applications as well as providing access to off-campus facilities by way of network connectivity. User access to these facilities is provided by a large number of terminals, both batch and interactive, conveniently distributed around the campus. The Center provides educational and core-curricular services, compatible with its mission, to assist the users in their computing activities. Although the Center is an entity distinct from the Computer Sciences Department, there is an interchange of students, faculty, and ideas between the two staffs.

Institute of Child Behavior and Development

The Institute advises students on programs of study and assists in the coordination of curricula in areas related to children; advises faculty on which of their colleagues to contact to organize innovative training programs or interdisciplinary research projects in child-related fields; and advises those outside the University who wish to obtain consultation, discuss programs of continuing education or seek assistance in the planning of sponsored projects in this area. The Institute keeps abreast of federal, state, and foundation sources of support, and acts as a "lead agency" role in the development of projects bringing the relevant disciplines. The Institute is part of University House.

Division of Sponsored Programs

This office maintains a resource center that collects and disseminates information on public and private agencies which provide funds for research and study. Included are references to pre- and postdoctoral fellowship awards, as well as application forms when available. Staff are available to locate potential funding agencies, assist in the preparation of budget and cover material, and give editorial assistance to achieve effective organization and technical correctness in an application. The staff also assists in preparing an application through the University and in locating the appropriate contact in the prospective donor's office. Once an award is made, monitoring and advisory services are provided for matters other than expenditure accounting.

Scanning Electron Microscope Laboratory

The Laboratory was established in September 1971 to provide facilities and technical assistance to research programs involving the use of a scanning electron microscope. Located in the Zoology Building, the Laboratory is equipped with a Cambridge Stereoscan 84 having a resolution of 150 angstroms and a useful magnification range of 20 to 50,000 diameters. In 1974, the scanning electron microscope was modified to improve performance by the addition of a lamellar hexaboride gun-pump system. The microscope is also capable of being interfaced with an energy dispersive X-ray spectrometer system for elemental analysis.

Child Development Clinic

The Child Development Clinic is an out-patient facility within the Division of Developmental Disabilities of the Department of Pediatrics in the University Hospitals. 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, gross motor function or learning disability, hyperactivity, mild behavior problems, or psychological problems associated with medical conditions.

Clinical Research Center

The Clinical Research Center is a 13-bed in-patient, 25-bed out-patient facility at the University Hospitals. Its functions are to provide the setting for patient-oriented research on disease processes important in medical practice, and to permit studies of normal human physiology, biochemical 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...
Institute of Public Affairs
The mission of the Institute 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 better understanding of and appreciation for their governments, help public officials better understand their roles and responsibilities, assist governments in their personal development activities, and help public officials and citizens in their efforts to implement change. (See "Division of Continuing Education.")

Institute of Urban and Regional Research
Primary objectives of the Institute are to broaden knowledge in the 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. The Institute is part of University House.

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 this Catalog). In addition, the Institute's Center for Location Analysis provides a focus for investigating the spatial efficiency of public services.

Iowa Center for Communications Study
See "Journalism" in "College of Liberal Arts.

Iowa Center for Research in School Administration
See "College of Education.

Iowa Lakeside Laboratory
See "College of Liberal Arts" and "Division of Continuing Education.

Iowa Urban Community Research Center
The Iowa Urban Community Research Center was established in 1958 as a permanent interdisciplinary research and training agency. Its research has been disseminated in scholarly journals and in a report series and a monograph series. The Center's community surveys are on tape in the 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 between 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 housed in the Department of Political Science. It provides technical assistance to faculty members, graduate and undergraduate students, and staff members engaged in research. This assistance includes both the data collection and analysis phases of research. The Laboratory serves the entire University community, regional schools in Iowa and Illinois, and public agencies at the local and state levels. It is involved in graduate education, directly training students to utilize the computer in their own research. It also provides empirical data which can be used in graduate courses and seminars and supports a large number of computer programs which can be used for data analysis. For undergraduate education, the Laboratory works with professors in developing curriculum materials which utilize empirical data and the computer for instructional purposes. The Laboratory has developed a number of computer-based curriculum packages. These instructional packages are the basis used at more than 50 institutions in the United States and Canada.

Management Center
See "College of Business Administration.

Radiation Research Laboratory (Radiation Biology)
See "College of Medicine."
Toxicology Center

The Iowa Center for Toxicology and Biochemical Pharmacology is an integral part of the Department of Pharmacology and is devoted to research in biochemical toxicology and pharmacology. Broadly, these include research on the disposition of drugs and poisons, their metabolic rates, the biological adequation and regulation associated with their use, studies on their teratologic and toxic effects and their mechanism of action at the molecular level. Doctoral degrees in pharmacology are offered.

Social Science Data Archive

The Social Science Data Archive is a library of machine-readable data which can be analyzed by faculty and students in their research and training. Approximately 850 studies are now included in the Archive, covering most of the social science disciplines. Individuals seeking assistance in using the data of the Archive can call an the staff at the Laboratory for Political Research.

University House

University House began in 1977 as a program dedicated to three separate but related missions. The first and most important is faculty development in general. To help faculty in their professional growth and advancement, University House provides on the Oakdale campus an environment, free from the usual distractions, in which faculty members can work-alone and together-on scholarly tasks in a congenial, supportive setting. It is also a place in which scholars from different disciplines can meet in easy interchange for mutual benefit.

A second means to foster these ends, University House sponsors many public lectures and conferences, visits by distinguished faculty from other campuses, and faculty seminars on a wide variety of topics. Faculty members in all disciplines are eligible for appointment and/or participation in University House activities. Thanks to a large grant, University House is also able to support research and other educational development activities jointly pursued by faculty members from the University and from the independent, four-year colleges of Iowa.

In addition to promoting faculty development in general, University House is also a program which seeks to bring together university centers, institutes, committees, and other groups into consortia, interdisciplinary arrangements that foster the acquisition of external support for research, education, and appropriate service.

A third role for University House is to assist the Office of the Vice-President for Educational Development and Research in its efforts to serve as a broker in important joint-research efforts that serve the public policy concerns of the state government and the people of Iowa.

University House has nearly 8,000 square feet of newly furnished space in the Oakdale Hospital, including private faculty offices, several conference and project rooms, and a lounge. Secretarial services are available. Located in the same building are a cafeteria, an auditorium, a large conference room, a copy center, a batch terminal connected to the Wang Computing Center, a terminal with word-processing capabilities, and a full-time assistant for computer services. Photocopying and book delivery services from University Libraries are also available. Half-hourly Campus service connects University House with the main campus.
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. Malott Theatre, Clapp 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 2,684 seats make it one of the United States' largest modern theaters, its design, coordinating functional with structural excellence, achieves unusual intimacy. The Auditorium is named after Virgil M. Hancher, president of the University 1940-64.

Museum of Art

Impetus for the construction of the University's Museum of Art came from Owen and Lella Elliott, when they offered their superb art collection to the University. Opened in 1969, the Museum is located immediately north of the School of Art and Art History in the Center for the Arts complex along the west bank of the Iowa River. The Museum provides an architecturally unique setting for the widely representative works of the Elliott collection and the University's permanent collection, and for important touring exhibits. Addition of the Carver Galleries in 1976 significantly increased 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 proper care for specimens which come to the University either by gift or through the efforts of its own collectors. It designs and executes new exhibits of educational value and offers instruction in the collection and technical phases of exhibit preparation and the general operational procedures of small science museums.

Habitat exhibits of North American mammals include the American bison, the antelope, the mountain lion, the American moose and the beaver.

A large and well-known bird habitat exhibit is the Leyden Island Cycloptera. This is a complete representation of a bird island of the Hawaiian group. Other habitat exhibits include the Jersey Sees, the Louisiana Swamp, the Fall Migration, and Crane on South Dakota Prairie. The crane exhibit includes both the sandhill crane and the rare whooping crane, as they appear on the prairie during migration.

The major invertebrate phyla are represented in several exhibits and include such familiar groups as the arthropods, mollusks, echinoderms and coelenterates.

Ethnological exhibition in the Museum present materials from many parts of the world. Indian and Eskimo materials, including beadwork and carved ivory necessities of the late nineteenth century, are exhibited. The ancestry of humans through 12 million years of time is portrayed in a display featuring replicas of fossil remains from Africa, Asia, Europe and the Americas.

Several displays are related to the geology of Iowa and include typical fossil specimens.

Office of International Education and Services (OI&S)

The OI&S is the focal point for University international education activities. It works in the areas of international studies, international educational exchange and technical assistance.

The OI&S works to promote the development of and cooperation among the various aspects of international studies — foreign language and area studies, comparative and topical studies, and foreign language
University Relations

The Office of University Relations seeks to foster understanding of participation in, and support of University aims and activities through effective way communication within the University community and between the University and its key publics. The Office has management responsibility for the Office of Public Information, the Department of Publications and Printing Service, and The University of Iowa Press. In addition, the Office of University Relations seeks to maintain an effective information program through use of internal and external media, and provide liaison between the central administration and appropriate University and governmental groups. University Relations publishes the UI on the Spokesperson, Faculty and Staff Newsletter (FJAC), Campus Correspondent, Calendar of Events, and Programmes: provides campus tours and other services for University visitors and guests; provides copy and photos for some University publications, and serves as the executive office of the Parents Association.

Public Information

The Office of Public Information includes Humanities/Science News Service, Health Center Information and Communication, Men’s Sports Information, Women’s Sports Relations, Art Center Communications, and Broadcast News Services. These units supply news, photos and information to print and electronic media, gather and prepare informative material for special and general interest periodicals, help prepare special University publications, answer requests for information and sell writers, photographers and broadcasters who visit the campus.

Publications and Printing Service

The Department is responsible for providing services to meet official printing and publications needs of the University. The Publications staff provides assistance to departments and campus organizations in planning, writing, editing, and designing publications. Printing Service is the production agency of the Department, with a printing plant and bindery. Several Copy Centers located strategically about the campus provide 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 carried by the faculty. The Department is responsible for ensuring University conformity with the printing laws of Iowa, including provisions for obtaining competitive bids on printing not done in the University Printing Service.

University Press

The University of Iowa Press was 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 educational development and research.

Reading Clinic

The Children’s Reading Clinic in the University of Iowa College of Education trains 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 which are suited to their needs and interests.

The Clinic teaching program includes practicum in Iowa City schools and in an on-campus and summer school during the academic year. During the summer the Clinic is in Westland Johnson Church and Hearing Clinic where the staff provides reading instruction for children who attend the Summer Residential Program for therapy in speech, hearing and reading. All the teaching that is under the auspices of the Children’s Reading Clinic is done by student clinicians under the close supervision of Clinic staff members.

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 recreational program on such activities as karate, tennis, golf, yoga, aikido, jodo 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, paddlesball, squash, canoeing, golf, archery, weight
The University of Iowa Alumni Association

The principal agency through which Iowa students continue their identity with the University after they leave campus is the University of Iowa Alumni Association. The Association was organized in 1897. Its current membership includes graduates and former students throughout the world. Its 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 in 1936 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 gift giving.

The Foundation is a private, nonprofit corporation 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. The Foundation is constantly at work to provide more funds for student financial aid, faculty development, library acquisitions and programs and projects throughout the University.

University Personnel Service

The University Personnel Service is responsible for meeting the employment needs of individuals and departments for the entire University complex. The office functions in the areas of recruitment, interviewing, screening, testing, placement, and salary and fringe benefit administration for full-time and part-time, permanent and temporary, nonteaching and nonstudent employees of the University. The University Personnel Office is responsible for the administration of the Board of Regents Merit System and the Unemployment Compensation Act. It also participates in certain aspects of the academic personnel program and in payroll recordkeeping and collecting personal record data for both faculty and staff employees.
General Facilities

The University's Main Library and its 12 departmental libraries contain approximately 2.1 million volumes. About two-thirds of this collection is in the Main Library.

The Arts and Architecture Library contains approximately 7,000 volumes, History, Chemistry, 36,000 Business Administration, 15,600 Education-Psychology, 11,600 Engineering, 43,260 Geology, 25,500 Health Sciences, 146,476 Library Science, 3,700 Mathematics, 28,800 Music, 53,410, 29,100 Physics, and 25,150 Zoology.

The Law Library, which is administered by the College of Law, contains over 200,000 volumes.

Special Resources

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

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

The Leigh Hunt Collection, brought together by Luther A. Biedeu of Cedar Rapids, Iowa, is considered one of the most complete in existence. It contains over 4000 manuscripts and manuscript letters written by Hunt or to him by his famous literary friends, 150 association volumes, and 600 editions of Hunt's writings.

The Mark Rainey Memorial Collection of approximately 3,700 volumes is particularly rich in deluxe editions, including many superb bindings made especially for Mrs. Rainey.

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

The John Springs Collection on typography, given to the University by a long-time Iowa City printer, includes 1,950 volumes of type specimens, books important in printing history, and volumes illustrating the art and progress of printing through the centuries. The "Ding" Darling Collection comprises originals of nearly 6,000 caricatures in which for more than 40 years Ding recorded and commented on the economic, political, and diplomatic affairs of the United States. His caricatures are virtually a pictorial history of this country during the first half of the 20th century. A subject index to the collection enhances its usefulness for reference and research.

The Bollinger-Lincoln Collection, gathered by Judge James W. Bollinger of Davenport, is one of the best libraries of Lincolniana in the United States. A number of items in it concern John Wilkes Booth and the trial of his fellow conspirators. Another large group contains reminiscences of people who knew Lincoln. Lastly, brochures relating to Iowa and the Civil War Period have been included.

The "J" Collection is a gathering of early, rare, or unique works on diverse subjects, including books of the 15th and 16th centuries, early American, Roxburghe Club publications, private press books, and selected modern first editions.

The Manuscript Collection includes more than 6,600 indivually catalogued volumes or manuscript items of English and American authors or historical figures, principally of the 18th and 19th centuries, in addition to 365 inventory collections of papers, diaries, and correspondence files relating to midwestern economic, political, and agricultural history.

Other special collections include the Harvey Leightenberg Collection of books dealing with the Amaranth Indians; the Levi C. Leonard Collection of manuscripts and documents dealing with rainmaking in the Midwest; the History of Hydraulics Collection: the Edwin Ford Pipe Collection of balls and folklore; the Chaubuste Collection, which contains several thousand letters and...
business documents descriptive of the Chaucerian movement; the Blunden Collection of poetry, biography and criticism, manuscripts, and letters relating to the contemporary English poet, Edmund Blunden; the Lowe Authors Collection, the Map Collection, containing more than 165,000 maps and indexed aerial photographs and nearly 2,500 ariases, gazettes, and related reference items; and the University Archives.
People have many reasons for going to college. Some have specific careers in mind, while others are looking for guidance in seeking careers. Most expect that college will help prepare them for a wide variety of employment, social, and personal development in their lives.

A liberal arts education is intended to ready students for effective performance in many situations over the course of their lives after graduation. It includes both preparation in specialties and a broad exposure to other areas of learning. Through the wide study of literature and language, mathematics, the physical, biological and social sciences, and the arts, students may gain a general understanding of the many types of situations and people they will meet after leaving college. Although this education often includes sound preparation for specific jobs, it also furnishes career flexibility by giving students broad bases for responding to changing employment opportunities. As a result, the danger that a graduate may become "boxed in" into a single unsatisfactory job is reduced.

The kind of flexibility and adaptability mentioned here are built upon an understanding of other cultures and languages, the social and political institutions in American society, communication behavior, and the physical and biological world about us. At liberal arts education includes something called a "general education" because students receive general preparation for the opportunities and problems they will encounter throughout their lives. This approach to education assumes that because we cannot now foresee all of these opportunities and problems, students are better prepared for the future if they have learned and developed abilities, awareness, sensitivities, and knowledge which will help them generate responses to unexpected events.

The College of Liberal Arts attempts to provide this versatility by its combination of major and general educational requirements.

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

Degrees Offered in the College

Degrees offered: B.A., B.S., B.F.A., B.M., B.G.S., B.L.S.

The College of Liberal Arts confers degrees in the following major fields:

- Ancient Civilizations—B.A.
- Anthropology—B.A.
- Art—B.A., B.F.A.
- Asian Studies—B.A.
- Astronomy—B.A.
- Biology—B.A., B.S.
- Chemistry—B.A., B.S.
- Classics—B.A.
- Communication Studies—B.A.
- Computer Science—B.A., B.S.
- Dance—B.A.
- Drama—B.A., B.S.
- East Asian Languages and Literature—B.A., B.S.
- English—B.A.
- Elementary Education—B.A., B.S.
- Elementary Education—B.A., B.S.
- Foreign Languages—B.A., B.S.
- General Science—B.A., B.S.
- Geography—B.A., B.S.
- Geology—B.A., B.S.
- German—B.A.
- Greek—B.A.
- Health Occupations Education—B.S.
- History—B.A., B.S.
- Italian—B.A., B.S.
- Japanese—B.A., B.S.
- Jewish—B.A., B.S.
- Latin—B.A.
- Letters—B.A.
- Linguistics—B.A.
- Music—B.A., B.S.
- Music and Foreign Languages and the Arts—B.A., B.S.
- Mathematics—B.A., B.S.
- Music—B.A., B.S.
- Music—B.S.
- Music—B.M.
Basic Program
Except for the degrees Bachelor of General Studies and Bachelor of Liberal Studies, the basic program for baccalaureate graduation from the College of Liberal Arts consists of:

General Requirements
Core areas
History/cultural
Literature
Natural science
Social science
Foreign language
Mathematics
Physical education skills
Rhetoric
Area of Concentration (major)
Electives
Typically, the student takes about one-third of his or her coursework in each of the three groups—general requirements, major requirements, and electives—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 of Iowa courses numbered above 99, and must achieve at least a 2.0 grade-point average in all these courses. No more than 30 100-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
The B.L.S. program is designed to serve adults who cannot attend the College as full-time, on-campus students. The program has no residence requirement. Work done in community private colleges in Iowa and in accredited off-campus colleges that are in accredited off-campus sites of college can be applied toward the degree, as well as applicable courses taken from any of the three Iowa Regents universities. Types of courses available from the Regents universities include correspondence courses; radio, television and newspaper courses; Saturday and evening courses; extension courses including those within new distance-learning formats; and regular on-campus and daytime courses. Students may also take proficiency examinations.

To be eligible for admission to the program the student must have earned either an Associate in Arts (A.A.) or Associate in Science (A.S.) degree from an accredited college or 62 semester hours of collegiate work acceptable for credit toward graduation. The student must satisfy the College's basic skills and core course requirements; holders of the A.A. or A.S. degrees will have already met these requirements.

Of the 124 semester hours of credit required for the degree, at least 45 must be earned in four-year colleges, in courses defined as upper-level where the credits were earned (in the College of Liberal Arts, courses numbered 100 and above); 45 must be completed in courses offered by the Iowa Regents universities; and 30 must be earned after admission to the B.L.S. program in the specific Regents university which will grant the degree.

The B.L.S. candidate must meet the general education requirements of the Regents university from which the candidate expects to receive the degree. In addition, must earn at least 12 semester hours (or 18 quarter hours) of credit in each of three of these areas:

- Humanities
- Communications and arts

Natural sciences and mathematical disciplines
Social Sciences
Professional fields, as approved by the degree-granting institution.

Unless these 38 semester hours, 24 must be in upper-level courses, and of these, at least 6 must be in each of the three selected distribution areas. Credits applied to the general education requirements may not be used to meet the distribution area requirements.

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 all upper-level coursework.

While the B.L.S. is awarded by the College of Liberal Arts, the program is administered by the Division of Continuing Education.

Address inquiries to: Credit Programs, W400 East Hall.

Two or More Bachelor's Degrees
Students who have already received a bachelor's degree and wish to qualify for an additional bachelor's degree must meet requirements for the second degree and complete at least 30 additional hours of study in residence in the College of Liberal Arts beyond the first degree.

Double Majors
Students may meet the major requirements in more than one department if both departments award the same degree the student may earn a bachelor's degree with two majors, e.g., P.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 consecutive, 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

After a student has earned 32 semester hours of college credit from all sources, no more credit can be accepted by transfer from a two-year college toward the 124 semester hours needed for graduation from the College of Liberal Arts.

Correspondence 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 Liberal Arts Advisory Office.

Academic Standards

Marking System

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

Grade-Point Requirements for Graduation

Baccalaureate graduation from the College generally requires at least a 2.0 average (1) on all college-level work attempted, (2) all work attempted at the University, (3) all work attempted in the major field, and (4) all work in the major field at the University.

A student who does not meet the requirements in (1) but who does have a cumulative grade-point average of at least 1.9 on all college work attempted and on all work attempted at The University of Iowa, and a 2.0 in the major field cumulative and at the end of each semester, may satisfy the requirement by earning sufficient grade points to equal or exceed a figure obtained by multiplying by two the number of hours required for graduation at the time of entrance.

The cumulative grade-point average is computed as follows: (1) multiply hours of credit in each course by the appropriate grade points; (2) total the grade points earned to date; (3) divide the sum by the number of hours undertaken, excluding courses in which grades of "W" or "P" are given. Grades of "P" are included in hours attempted and are used in computing the grade-point average.

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. 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). The student may apply no more than 16 semester hours of "pass" credit towards the bachelor's degree, and may earn this credit only in rhetoric, physical education skills, 2000-4000 level Mathematical Techniques and/or elective courses.

A student may not take courses in his or her major department on a pass-fail basis, but courses required for the major in cognate or related areas may be taken on a P/F basis, if available, at the discretion of the major department. A student may register for only two P/F courses per semester and/or summer session.

For transfer students with more than 55 semester hours of transfer credit, the "pass" credit limit is eight.

"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. All students in such courses are graded this way. 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 at the College of Liberal Arts may register for zero credit (audit) with the permission of the instructor and the advisor. 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. Course completed with a mark of "R" do not meet any graduation requirement. The final semester hours credit for the course will be used in assessing tuition fees.

Second-Grade-Only Option

Unless obvious regression is involved, a student may repeat a University course and have only the second grade and credit included in computation of the grade-point average. A student who wishes to utilize the provisions of this rule should come to the Liberal Arts Advisory Office to complete the necessary form.
Incomplete and No Report
A mark of "I" (incomplete) or "U" (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," except that students with incompletes from the spring semester and exempt from completing the courses during the succeeding summer session.

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 80 semester hours of study in residence in the College. All must have completed at least 40 semester hours of study in the College before his or her final registration.

Dean's List
Liberal Arts students achieving grade-point averages of 3.50 or above during a given semester or 12 or more semester hours of graded work with no "F"s or "D"s still standing on the current or past semester's record, 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, 476 Riverside Drive, New York, N.Y. 10027.

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 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 supplemental; the certificate is not a substitute for a major. The choice of the various language departments serves as advisors to students in preparing for the certificate. After defining an area, country or field of interest, students wishing to earn the certificate will be guided by the appropriate chair in choosing a group of courses designed to provide a basic understanding of the area or country. Courses may include work in geography, history, anthropology, art, literature, political science or other fields offering international studies.

Programs leading to the certificate will include at least 18 semester hours in coursework related to the chosen 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 certificate program designed by the appropriate departmental chair receives the Foreign Studies Certificate with his or her degree.

Interested students should consult the chair of the appropriate department:
Classics (Ancient Greece or Rome)
East Asian Languages and Literatures (India, China, or Japan)
French and Italian (France or Italy)
German (The United States, Germany, Austria, Switzerland, Italy, and other Germanic countries)
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 enhance their studies in Honors seminars, independent research and other special activities, and to earn the baccalaureate degree with "Honors." Entering freshman 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)
Joint programs leading toward graduation from the College of Liberal Arts may be used with the following programs:
University of Iowa: College of Medicine
University of Iowa: College of Dentistry
University of Iowa: College of Pharmacy
University of Iowa: College of Engineering

To be eligible to use a joint program with the above colleges toward graduation from The University of Iowa, a student must have completed all of the following prior to going to a "professional" college:
Earned at least 94 s.h.: Satisfactory skills, core, and foreign language requirements;
Met the requirement for the major;
Satisfied the residence requirement of the College.

After the student completes the first year of medical or dental college, the University of Iowa, with upon presentation of a transcript, awards a baccalaureate 30 s.h. of undegraded elective credit. These credits may be applied toward a University of Iowa degree.

To use a joint program with any college
except the University of Iowa, a student during his last semester in residence at Iowa should apply to the Graduation Analysis Section of the Office of the Registrar for permission to use this joint degree program. If approved and following the academic discipline and any other academic

General Course Requirements
(Note: Graduation from an accredited junior college with an A.A. or A.B. degree and at least 60 semester hours of transfer credit satisfies all College of Liberal Arts general course requirements outlined below, except the foreign language requirement.)

Core Requirements

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

These requirements may be met in part or totally by satisfactorily performance on approved tests from the College-Level Examination Program (CLEP). With the approval of his or her major department, a student may be excused from the core requirement in the area of his or her major. 

Omit in literature, core courses may be taken as electives. No core courses or departmental courses used to meet core requirements may be taken pass/fail if they are to be used toward satisfying the five core requirements of the College.

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

Historical-Cultural Core

This requirement may be met by any combination (nonredundant) of the following courses totaling 8 s.h.

1120 Problems in Human History 3-4 s.h. 
1130 Problems in Human History 3-4 s.h. 

Art and Music: culture and expression; history and art, music or dance history and appreciation.

1110 Prose in World History 3-4 s.h. 
1120 Problems in Human History 3-4 s.h. 

1120 Problems in Human History 3-4 s.h. 
1130 Problems in Human History 3-4 s.h. 

Additional courses in one of the four core areas as specified by the student.
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 11:1 The Interpenetration of Literature, followed by any other core courses.

All core courses in literature exist for substantial, independent reading, and 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 literature, or with three semester hours of transfer credit and four semester hours of University credit in an approved literature core course.)


11:4 Idea of Tragedy 4 sh. Major representatives of tragic vision of man's experience in narrative prose and drama from classical time to present. Prerequisite: 11:1.

11:3 Idea of Comedy 4 sh. Variety of forms of view of the past and present. Included are: Sophocles, Molière, Webster, Irving, and others. Prerequisite: 11:1.

11:9 Narratives Literary 4 sh. Selected masterpieces of all as recent developments in the art of storytelling in both prose and verse. Prerequisite: 11:1.

11:7 Lyric Poetry 4 sh. Poetry from major periods of development as well as contemporary verse, with emphasis on définitions of genre and major formal patterns of poetry. Prerequisite: 11:1.

11:6 Literature of the Theater 4 sh. Selected plays from Shakespeare's time to present with some consideration of dramatic motives and forms in other genres. Prerequisite: 11:1.

11:5 American Utopia 4 sh. Major works of American utopian writing from Thomas to the present. Prerequisite: 11:1.


11:6 Literary Presentations of Women 4 sh. Works from various genres and time periods focusing on the presentation of women by both male and female writers. Prerequisite: 11:1.

11:7 German Heroes and Epic Literature of the Middle Ages 4 sh. Three epic masterpieces, Parzival, Tristan, and the Nibelungenlied, and other readings from the period, in English translation. Same as 10:17.

11:11 Contemporary Latin American Literature 4 sh. Themes and narrative techniques of major authors of Latin America, in English translation. Prerequisite: 11:1. Same as 9:16.

11:11 Aztec Religions 4 sh. Characteristic literary texts of Mexico or India in English translation. Offered in fall. Prerequisite: 11:1. Same as 10:16, 10:18.

11:30 Middle Eastern 4 sh. Characteristic literary texts of Iran and India in English translation. Offered in spring. Prerequisite: 11:1. Same as 10:20, 10:22.

Natural Sciences Core

This requirement may be met by any combination (non-overlapping) of the following courses and approved departmental courses totaling 8 sh. (transfer students may meet this core requirement with eight semester hours of transfer credit in core-equivalent courses in astronomy, biochemistry, botany, chemistry, geology, mathematics, microbiology, physics, and zoology.)

Life Science

11:31 Human Biology 4 sh. Human evolution, reproduction, genetics and neanderthal culture of our biological evolution from cave to technology; on place and problems with our environment. Lecture, laboratory, discussion. Independent of 11:21.


Earth History and Resources

11:3 Earth History and Resources 4 sh. Formation of rocks, mineral resources, evolution, landscapes, water management, earthquakes, mountain building, atmospheric, and continental drift, for resource students. Lecture, laboratory. Not open to students who have had 11:1, 11:5, 11:8.

11:14 Life and Physical Environment 4 sh. Climatic, air pollution, science that makes our natural environments, our energy resources and problems, and our ecology. Lecture, laboratory. Not open to science students. Not open to students who have had 11:9.

Physical Sciences


11:28 Geology and Geology of the Surface 4 sh. Develops selected areas of research from basic to modern research and applications. For non-science majors. Lecture, 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 list to satisfy the natural science core requirement. For descriptions of the departmental courses, see the appropriate departmental section of the Catalog.

Biology

21:1 Introduction to Botany 4 sh.
21:11 Plant Diversity 4 sh.
21:12 Biology of the Local Flora 4 sh.

Chemistry

4:1 Principles of Chemistry I or
4:7 General Chemistry I 3 sh.
4:11 Principles of Chemistry II 3 sh.
4:16 Elementary Chemistry Laboratory 2 sh.
4:9 General Chemistry II 3 sh.
4:9 General Chemistry Laboratory 2 sh.

General Science

(Only for students majoring in elementary, special, or early childhood education)

Students with no college science take:

2155-6 Systems Foundations 9-6 5 sh.
229:60 Theory of Arithmetic 3 sh.
Students with four or more semester hours of college science take:

97:104 Science Foundations for Educators 3 sh.
229:60 Theory of Arithmetic 3 sh.

Geology

12:1 Introduction to Geology 4 sh.
(may not be taken in combination with 11:18)
Mathematics
22M:10 Fundamentals of College Mathematics I 4 s.h.
22M:11 Fundamentals of College Mathematics II 4 s.h.
29:11 College Physics 4 s.h.
29:17 Introduction to Astronomy 4 s.h.
29:12 College Physics 4 s.h.
29:18 Introduction to Physics II 4 s.h.
298 Basic Physics 4 s.h.
29:105 General Astronomy 4 s.h.
37:3 Principles of Animal Biology 5 s.h.

Social Science Core
The social science core requirement may be met with eight or more semester hours of credit earned in any combination of courses listed below. For course descriptions, including prerequisites, see the appropriate departmental section of the Catalog.

The social science core option for transfer students is eight semester hours of transfer credit in core-equivalent courses in anthropology, economics, geography, political science, psychology, and sociology.

Anthropology
115:3 Introduction to the Study of Culture and Society 4 s.h.
115:10 The World’s Peoples 4 s.h.

Economics
82:1 Principles of Economics 4 s.h.
82:2 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.
44:10 Natural Environmental Issues 2 s.h.
44:05 Introduction to Urban Geography 3 s.h.
44:06 Introduction to Urban Geography 3 s.h.

Linguistics
100:1 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.
30:32 Introduction to Political Philosophy 4 s.h.
30:32 Introduction to Political Theory 4 s.h.
30:34 Introduction to Comparative Politics 4 s.h.
30:35 Introduction to World Politics 4 s.h.
30:10 The American Political System 4 s.h.

Psychology
11:1 General Psychology 4 s.h.

Sociology
30:1 Introduction to Sociology: Principles 4 s.h.
30:2 Introduction to Sociology: Problems 4 s.h.

Foreign Language Requirements
The Bachelor of Arts degree requires at least four semesters of college-level study in any of the foreign languages taught in the University. The requirement may also be satisfied by completion of four years of high school study in one language, completion of a combination of high school and college study in one language which would be the equivalent of four semesters of study on the college level, or satisfactory performance in an achievement examination measuring proficiency equivalent to the usually attained after four semesters of college study 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 53 on the mathematics section of the American College Tests, or completion of 21 credit hours in Calculus I and II and Basic Mathematical Techniques or a mathematics, statistics, or computer science course taught in the DIHMl of Mathematical Sciences.

Physical Education Skills Requirement
This requirement may be met with four semester hours of credit in the physical education skills course, or by satisfactory performance in any of the comprehensive physical education skills tests given at announced times each semester. The student may receive up to four semester hours of ungraded credit for successful completion of the test.
Freshmen who take the test but fail it must register for physical education skills 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 no credit. No more than four semester hours of credit in physical education skills may be counted toward a baccalaureate degree.

Students who have passed their 23rd birthday prior to their first registration in the University are excused from the physical education skills requirement.

Students who present evidence of having completed a basic training program in some branch of military service may be excused from the requirement.

Transfer students may meet the requirement with four semester hours of transfer credit in physical education. Transfer students admitted to the University with more than 40 semester hours of transfer credit are excused from the requirement. Transfer students transferring less than four semester hours of physical education credit and less than 40 hours total credit must complete the four-hour requirement at Iowa.

The instructional program in physical education skills provides for a wide variety of activities. The program also gives the student an opportunity to correct physical defects which result from therapeutic exercises.

Courses with which the student can meet the requirement are:

10:21 Physical Education Skills
2 a. h.
Basic instruction in student's choice among a wide variety of line and individual sports, physical and nonmuscular activities. See current Schedule of Courses for skills offered.

10:31 Physical Education Skills
2 a. h.
Description same as for 10:21.

10:32 Physical Education Skills
2 a. h.
Description same as for 10:21.

Rhetoric Skills Requirements

The College of Liberal Arts requires all entering undergraduates 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 10:1-2, a two-semester, eight-credit-sequence, or to 10:3, a one-semester, four-credit-course.

Students initially assigned to and registered for 10:3, 10:4, or 36R25 may attempt to satisfy all or part of the rhetoric requirement, and earn two or four semester hours of credit, by taking the writing and/or speech test offered during the first week of the semester. Rhetoric classes begin with student performances which serve as placement indicators. 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 Rhetoric and Writing Labs offered by the Rhetoric Program. Some students may be advised to switch to 10:1, a one-semester, two-credit-course of individualized instruction in reading and/or writing. 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 Rhetoric and Writing Labs offered by the Rhetoric Program. Some students may be advised to switch to 10:1, a one-semester, two-credit-course of individualized instruction in reading and/or writing. 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.

(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 advised to switch to 10:3-4 or 36R25. 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 any special requirements for the program of his or her choice.

Entering Freshmen

An applicant seeking admission as an entering freshman must have the high school from which he or she graduated provide a certificate of high school credits, including a complete statement of high school record, class rank, scores on standardized tests and certification of graduation. An applicant may be tentatively admitted after he or she has completed the junior year in high school, but admission will be final until receipt of the transcript and certification of high school graduation.

A graduate of an approved Iowa high school who has the proper subject-matter background, is in the upper one-half of his or her graduating class and meets specific curricular requirements, will generally be admitted upon certification of graduation.

An applicant who is not in the upper one-half of his or her graduating class may be required to take special examinations, and, after a review of the entire record and at the discretion of the admissions officer, may be admitted unconditionally, admitted on probation, required to enroll for a trial period during a preceding summer session or denied admission.

A graduate of an accredited school in another state will be expected to meet higher standards than the requirements for a graduate of an Iowa high school. The options for admissions by probation or trial enrollment may not be open to these students.

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

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

Undergraduate Students Transferring from Other Colleges

Students from Accredited Colleges and Universities

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

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

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

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

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

Students from Nonaccredited Colleges

The College may refuse to recognize credit from a nonaccredited college or may admit the applicant on a provisional basis and provide a means for the validation of some or all of the credit. The validation period shall not be less than one semester and will ordinarily be a full academic year. The College will 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.

Foreign Students

Foreign applicants (students who are or will be in the United States temporarily under provisions supervised by the U.S. Immigration Service for purposes of attending educational institutions), whether U.S. high school graduates or not, may be asked to meet higher standards for admission than the minimum requirements outlined for a resident graduate of an Iowa high school. Applicants whose native or official language is not English must provide a score report from the Test of English as a Foreign Language (TOEFL) before admission may be granted. The Admissions Office may use other tests or criteria for judgment of proficiency for admission purposes. Students admitted with a TOEFL score of 550 or above will be considered proficient in English and held only to the same English requirements as other students. Students who score between 480-500 (TOEFL) are required to take an English proficiency examination by the University's Department of Linguistics prior to registration.

Freshmen evaluated as proficient must enroll in 101.1 or 103.1 Rhetoric. If not proficient, the student must enroll in appropriate English as a Foreign Language (EFL) courses. Thereafter, evaluation of the student's language competency must be made every semester prior to registration, and the student must continue to enroll in EFL courses until the student demonstrates proficiency or has earned a TOEFL score of 550 or more.

The Linguistics Department offers eight EFL courses (102.1, 103.1, 105.1, 106.1).

Foreign students who have attended a U.S. college or foreign college or both before transferring to Iowa for undergraduate study may be expected to meet higher admission standards than the minimum requirements outlined for in-state transfer students. Foreign transfer students will have their proficiency in English evaluated in the same manner as entering freshmen. Those who are initially evaluated as proficient will fulfill the uniform undergraduate rhetoric requirements. If not proficient, enrollment in EFL courses is required until proficiency is demonstrated. Like foreign applicants, immigrants (permanent aliens) from typically non-English-speaking backgrounds may be required to take the TOEFL, or other suitable measures of English proficiency.

Aerospace Military Studies Department

The Air Force Reserve Officers Training Corps (AFROTC) at Iowa is designated as the Department of Aerospace Military Studies in the College of Liberal Arts. Credits earned in the Department may count toward any degree the University offers. A student may enroll in any academic course the Department offers, whether the student is a cadet or not.

To meet the challenges of complex, high-technology developments, the Air Force must have a professional officer corps with special abilities in a wide range of skills. Specialized aircraft manned by skilled pilots and navigators are the most flexible weapons system in the Air Force. The Air Force also needs young officers to work with space and development, complex communications-electronics systems, high-speed computers, and in specialized fields like law and medicine.

The AFROTC program is designed to train officers with these capabilities. The first two years of the program at Iowa, and participation in summer field training, afford a non-obligation look at the Air Force. Entry into the first two years of the program is competitive, and entails a commitment to serve four years as an Air Force officer. Cadets entering flight training incur an additional three-year commitment.

Standard Program

The Air Force recognizes that the officer must be both a professional and a resourceful manager. To assure that these traits are given an opportunity to develop, AFROTC has adopted an approach to learning which stresses student responsibility and involvement, in small seminars, cadets engage in group discussions, debate, problem-solving, and simulation activities requiring maximum individual participation and group cooperation. An essential part of the learning process is the student's personal responsibility for his or her own learning.
Throughout the year, classroom instruction is supplemented by 3- and 4-day visits to Air Force bases, for orientation to Air Force life.

Two- and Three-Year Programs

Although the AFROTC curriculum normally spans four years, it can be completed in three years by completing the first two years' courses in one year. The program can also be completed in two years if the student attends a six-week summer field training at an Air Force base before beginning the last two years of the regular curriculum. Students interested in the two-year program should contact the Department of Aerospace Studies early in the semester prior to attendance at field training.

Field Training

Prior to commissioning, all cadets must attend a field training session offered at Air Force bases across the country. Field training for four-year cadets is four weeks in length and includes courses in cadre orientation, survival training, aerial orientation, physical training, Air Force organization and function, career orientation, small arms familiarization, and human relations.

Two-week periods on active duty working in the student's future career area or rotation at the flightline or "jump" school are voluntary and are also available to selected students.

Advanced Placement

Service veterans can get full credit toward commissioning (not graduation) for the first two years of AFROTC.

Flight Instruction Program

During the year prior to commissioning, students qualified for flight training will receive 20 hours of flying training from the Iowa City Flying Service.

Financial Assistance

Scholarships which provide tuition, books, laboratory fees, and a $100 per month tax-free subsistence allowance are available to cadets. Applications for four-year scholarships are submitted directly to National AFROTC Headquarters. Applications for 2 3/4, 2 1/2- and 2-year scholarships are submitted through the Department of Aerospace Studies at the University.

All cadets in the last two years of AFROTC receive $100 monthly as a tax-free subsistence allowance. Students attending field training are paid while there and receive travel expenses. Uniforms and books for lineages taught by military faculty are furnished and a $300 uniform allowance is provided for commissioning.

Educational Delay

Cadets may request an educational delay to postpone entry to active duty until after completion of an advanced degree or professional school.

Special Activities

The Department of Aerospace Studies sponsors several activities which contribute to cadet and University life.

The Arnold Air Society is a national professional honor society which engages in University and community service activities. The Cadet Corps sponsors social activities throughout the year, including informal parties, a formal dinner, a military ball, and an awards ceremony which honors outstanding cadets for their accomplishments.

Courses

23A/11 The Air Force Today 1 s.h.
Introduction to Air Force Life: includes organization, rank, and structure of the Air Force; modern uses of offensive and defensive forces; the management of special purpose forces.

23A/12 The Air Force Today 1 s.h.
Continuation of 23A/11.

23A/21 The Development of Air Power 1 s.h.
Thesis development of air power from the 15th century to Vietnam. Includes development of air power doctrine, influence of technology, role of air power in military and humanitarian operations.

23A/22 The Development of Air Power 1 s.h.
Continuation of 23A/21.

23A/23 Aerospace Military Studies Flight Instruction 2 s.h.
Prepares students to pass FAA private pilot's written exam. Includes FAA regulations, flight computer, navigational meteorology.
dynamics in the humanities and social sciences. The Program originated in 1961 in courses intended to foster awareness of the role Afro-Americans have played in the development of the United States and to promote understanding of their present conditions and concerns of black Americans. Subsequently, these courses have been organized into a curriculum including a program leading to the Master of Arts degree in Afro-American studies, and concentrations of Afro-American Studies in programs leading to a B.A., M.A., or Ph.D. in American Studies. It is also possible for students seeking Ph.D. degrees in English or History to organize courses in Afro-American literature or Afro-American History into a special field or cognate area.

Although most of the students in the PhD program are preparing to work in colleges and universities as teachers and administrators, the B.A. and M.A. programs provide valuable backgrounds for many other students seeking careers in community work, public school teaching, religion, government, and political science. In short, the Afro-American Studies Program offers training important to any individual whose career will involve understanding and knowledge of black Americans.

Graduate Programs

The Master of Arts Program

The interdisciplinary curriculum leading to a Master of Arts degree in Afro-American Studies has been designed particularly for individuals desiring an intensive, organized, graduate-level examination of Afro-American culture and experience. Such a program especially benefits individuals preparing to teach in community colleges, to work with community-service organizations, or to involve themselves in careers for which an understanding of Afro-Americans may be significant.

Curriculum Requirements

The Master of Arts program in Afro-American studies comprises 34 post-baccalaureate semester hours, normally completed in three semesters. Requirements include 45.711, 45.712, and 12 semester hours of elective courses in Afro-American Studies.

Students will be required to earn six semester hours in literature/history by taking 45.118-119: Afro-American Literature I-II. The seminar 45.118-119 is required to complete both 45.118-119 and 45.155-156 with only one hour of graduation credit. A student who has completed year-long, undergraduate or graduate courses in both Afro-American literature and Afro-American History will be permitted to satisfy the literature/history requirement by selecting six hours of Afro-American Studies electives approved by the student's advisor.

Because the Afro-American Studies program committee wishes to encourage doctoral study for those who are interested in the subject, and the resources, it recommends that the other nine semester hours be required in the Master of Arts Program be used to explore educational training in disciplines other than Afro-American Studies. Among possible fields of study are American studies, anthropology, education, English, geography, history, and sociology. Students are encouraged to select at least one-half of the coursework in their curriculum from those numbered above 200.
Language/Tool Requirements
No foreign language or tool is required for the Master of Arts Program in Afro-American Studies, but individuals desiring the possibility of doctoral study in another field will be encouraged to attempt to complete one tool/language requirement for that field while studying on the master's level.

Comprehensive Examinations
Each student will be required to pass a written comprehensive examination in Afro-American Studies. The comprehensive examination will be prepared and evaluated by a committee of faculty members who teach courses in the Afro-American Studies Program. A component of the comprehensive examination will be based on a reading list in Afro-American studies prepared and approved by the Afro-American Studies steering committee.

Thesis/Project Requirements
A thesis is not required for a Master of Arts degree in Afro-American Studies. If a student elects to write a thesis, the thesis must explore a topic of Afro-American culture and/or experience and must utilize research from more than one discipline. The maximum credit for such a thesis is four semester hours, and failure of a thesis eliminates the requirement of 45:211.

A student who does not elect to prepare a thesis is required to develop, in consultation with an advisor, a project related to Afro-American culture and/or experience. When completed, this project must be presented and defended before an AASIA graduate committee.

Admission Requirements
In addition to the general requirements of the Graduate College, unconditional graduate admission in Afro-American Studies requires an appropriate disciplinary background in literature and the social sciences, at least six hours of college credit in courses in Afro-American literature and/or history, and a minimum grade-point average of 2.7 in previous college courses in Afro-American studies. A student may be asked to take, without credit toward the master's degree, courses needed to remedy any deficiencies in undergraduate preparation.

An application for admission will be expected to provide three letters of recommendation from former professors, and a sample of his or her scholarly written work. Recommendations for admission will be made by the admissions subcommittee of the Afro-American Studies steering committee.

Afro-American Studies Concentration within an M.A. Program in American Studies
Generally, graduate seeking a concentration in Afro-American Studies within a Master of Arts program in American Studies will be an individual who is preparing for a career as a research scholar or a college/university teacher, and proposes to undertake doctoral study in American Studies. Of the 36 post-baccalaureate semester hours required for the degree, 12 to 24 normally are taken in Afro-American Studies. Since the Afro-American Studies program is interdisciplinary, students taking 24 hours are required to complete 45:211 and are encouraged to complete 45:196-117 and 45:185-186, except when equivalent courses have been taken on the undergraduate level.

For other requirements, see the program for an M.A. in American Studies described elsewhere in this Catalog.

Afro-American Studies Concentration within a Ph.D. Program in American Studies
Generally, a student seeking a Ph.D. in American Studies with a concentration in Afro-American Studies is preparing to be a teacher or research scholar on the college or university level. Of the 72 post-baccalaureate semester hours normally required for the degree, at least 30 semester hours (not including the thesis) must be in courses in Afro-American Studies, including 45:211, 45:196-117 and 45:185-186 also are required, except when the student has completed equivalent year-long surveys in Afro-American History and American History. Before enrolling in the graduate program at The University of Iowa.

The interdisciplinary concentration in Afro-American humanities and social sciences requires students to explore both areas. The thesis (dissertation) must not only investigate research from more than one field, but must also be focused on an aspect of Afro-American culture or experience.

Other Requirements
For additional requirements, please see the description of the requirements for the doctoral program in American Studies in the appropriate section of this Catalog.

Cogitate Areas or Special Fields
It is possible for students to take concentrations in Afro-American courses in certain areas or special fields in Ph.D. programs in history, English, and other disciplines. For further details, consult with an advisor in Afro-American Studies.

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 institutes, which bring renowned artists and lecturers to the campus, have focused on such topics as 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 3 s.h. 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
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 artifacts 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 interracial understanding among all members of the University community.

Black Genetics Triangle

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

AFRO-AMERICAN STUDIES AND RELATED AREAS

4538 Literature of the African Peoples

4539 Introduction to Afro-American History

4565 Afro-American Art

4570 Afro-American Sociology

4571 Afro-American Philosophy

4572 Afro-American Languages

AFRO-AMERICAN STUDIES AND RELATED AREAS

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The major program normally consists of 12 courses (36 s.h.) selected to meet the following guidelines:

Four courses (12 s.h.) in American or Afro-American Studies, including 16:1 and 45:60 and two additional courses from 45:2, 45:60, 45:61, 45:101, 45:130, 45:136, 45:138, 45:156, 45:158, 45:161, and 45:166.

Six courses (18 s.h.) from cognate departments (or additional American Studies courses). In consultation with an advisor, the student should select appropriate courses which relate and support a common period, topic, theme, or problem in American cultural experience.

Honors

Honors candidates in American Studies must elect 45:36 and 45:36. In the latter course, the student will, with the advisor's help, define and research an interdisciplinary topic and present the results in a senior essay.

The Masters of Arts Program

The M.A. in American Studies may be either a terminal degree or preliminary to the Ph.D. in American Studies or in a traditional department.

A joint program exists with the College of Law which offers a joint cultural context for the study and practice of law and leads to the J.D. and M.A. degrees simultaneously. Students in such joint programs may be arranged in other professional fields.

The M.A. program is designed to be completed in three semesters, and normally includes 12 courses (36 s.h.). These courses should be chosen to meet the following requirements:

Four American Studies courses or seminars, including 45:200, 45:401, and two additional courses.
Four courses in one field or aspect of American Studies, either in a traditional discipline or a topic, period, or problem approach from several disciplinary or methodological perspectives.
Four courses in another field or aspect of American Studies, and
A comprehensive examination on coursework and basic concepts.

The Doctoral Program

The doctoral candidate in American Studies, in consultation with an advisor, arranges a coherent program of courses and seminars for a major of 72 s.h. beyond the B.A. Successful completion of these courses, the comprehensive examination and the writing of the doctoral thesis, together with demonstrated mastery of the required tools and skills, comprise the steps to this interdisciplinary degree in cultural studies.

Candidates prepare themselves in five areas: American Studies seminars in interdisciplinary approaches and methods; substantial coursework in a major field or topic-equivalent work in a second major field or topic/courses in a minor field or topic; and tools, skills, or comparative culture study.

The required fulfillment of credits in planning a program, the American Studies candidate must meet certain basic requirements. One such requirement is that all students directly engage, in both coursework and reading, the cultural diversity of American life and experience. Therefore, some coursework in all areas will be American Studies, Women's Studies, Native American culture, or Chicano culture expected will be supplemented with courses in the candidate's major area.

A second requirement is that each program will include substantial study of one period of American cultural history. As defined to reflect the student's particular interests, the five general areas are as follows:

American Studies: The candidate will normally elect four or five courses or seminars in American Studies, including 45:200 and 45:401. Of the total courses, 45:400 a tutorial in independent reading and research leading to a course syllabus or a written essay is strongly recommended. Instead of a written exam in this area, the student will prepare a position paper or interdisciplinary essay.

First Major Field. Normally, six or seven courses (16-21 s.h.) will be selected in one field, area, or topic. The student is required to engage independently in the field in tutorials. The nature and scope of a major field will vary. For some, it will be a traditional disciplinary field such as American Social and Intellectual History, American Politics, or African American literature. For others, it may be a comparative study of institutional life or family or contemporary cities, or of thematic or period studies (e.g., women in American culture).

1820-1930, or contemporary popular culture.

After taking a group of related courses, the student will write a scholarly essay, document, or artifacts which focus the coursework and on which a four-hour written examination will be based.

Second Major Field. The student elects six or seven courses in another field, topic, or theme in American culture studies, complementary to the first field, if the first field is defined broadly or traditionally, the second may be more specific or thematic. If one field is predominantly literary in content, the other might focus upon history or the social sciences. Penetrate of several courses may be combined to flesh out a special field, but overloading plans for credit should be avoided.

Again, a four-hour written exam will be set on a field of books, documents, or artifacts from this area. This written exam, together with the position paper and the four-hour written exam, will form the grounds for the final examination.

The Minor Field. The area will normally compose three or four courses, or relevant portions of a larger number, organized around a specific topic or sub-discipline.

Examples: Indian-White Cultural Relations, Crucible of an American Soil, Technology and American Culture. A student who wishes to explore a minor field or discipline within the scope of a major field may, if he desired, provide one of the major fields with a thematic or specific focus.

Instead of a written exam, the student will prepare an annotated bibliography on the field which will be evaluated by a member of the faculty. The student must have already submitted an annotated bibliography in a course or field option for a two-hour written exam based on a suitably abbreviated reading list.

The Project. Comparative Cultures, Inc. The final area of coursework in American Studies is a cluster category for up to 12 semester hours, to be selected in the student wishes among the following:

Up to 8 s.h. for graduate-level courses in foreign languages, remaking, linguistics, computer science, statistics, etc.;
Up to 5 s.h. theses research and writing, following completion of the comprehensive exam and other requirements;
Tools and Skills

In addition to coursework, American Studies doctoral candidates must demonstrate mastery of certain tools and skills useful for culture studies. These are meant to complement fields of study, provide theoretical or historical perspectives and facilitate research. Tools and skills include foreign languages, statistics and computer science, still or motion picture photography, linguistics, creative writing, and certain courses such as psychoanalysis, communications, or political theory. Two tools or skills requirements must be satisfied for the Ph.D.: this may be done by coursework, prior experience, summer internships, or independent study.

Internships

Internships for qualified American Studies students are arranged with the following institutions: State Historical Society of Iowa; Division of Historic Preservation; University of Iowa Museum of Art; Living History Farms; Herbert Hoover National Historic Site; Putnam Museum; Davenport. Research is carried out during their on-the-job training, academic credit can be granted, either for semester or summer programs.

Thesis

The final requirement for the Ph.D. is a satisfactory thesis on a topic the investigation of which involves more than one field or discipline. Creative theses (including fiction, autobiography, film, etc.) are allowed if continued with critical analysis of the cultural experiences reflected therein.

Courses

Primarily for Undergraduates

481 American Values

3 s.h.

Introduction to American Values via representative texts, myths, and cultural values in historical and contemporary situations.

483 Below America Culture

3 s.h.

Triplet and publicity in American Arts and Women's Studies. Recent research has focused on what aspects of American experience up new, women and the family, political craft,dcrc America cultural values, the TV situation comedy.

485 Senior Colloquium

3 s.h.

Interdisciplinary approach, with lectures by students and seminars. Interdisciplinary perspectives and topics include a wide range of subjects and areas of interest. Offered in the fall and spring of each semester.

486 SeniorProject

1-2 s.h.

In-depth research and writing on an interdisciplinary topic.

For Undergraduates and Graduates

481/191 Alpha Xi Xiota

3 s.h.

Social, demographic, and imaginative perspectives on the older American.

481/191 Anglo-American Studies

4-6 s.h.

The thematic period in American culture, cultural thought. Historical events, art, and the era; several optional critiques of space, political, and cultural trends. For the by permission of the instructor. Same as 818.41.

481 Visual Arts and American Culture

3 s.h.

Painting, photography, film and animation as cultural expression of American Art and thought.

481 American Society

3 s.h.

Mime 33410.0.

481 American Association: The Comanches

3 s.h.

Introduction to a study of an American society, the Comanches, American Indians.

481 Cooperative Perspectives on American Culture

Aspects of American and 19th century American culture examined through literature, history, film and television. Emphasis is on their relationship to other features of American culture.

481 Popular Culture

2-3 s.h.

Examination of several types and varieties of American popular culture such as the definitive novel, the Western, the Hollywood film, and the television drama. Emphasis is on their relationship to other features of American culture.

481/192 Introduction to American Studies

3 s.h.

American society from 1607 to the present, with special attention to social science approaches.

481/192 Introduction to American Studies II

Approaches to history and major dimensions of American culture and suburban experience.

482/225 Psychoanalytic Culture

3 s.h.

Psychoanalytic and post-Freudian theories of culture and personality. Theory, history, philosophy, psychoanalytical praxis in the field of cultural and social psychology.

483/195 Special Project: Graduates

4 s.h.

Independent research and literature in advanced research, method, and art projects of American Studies, leading to a new course, style, or collaborative essay.

483/197 Seminar in American Studies

3 s.h.

Interdisciplinary approach to culture From theory in the arts and interdisciplinary approaches to American Society. Offered in the fall and spring.

483/295 Seminar: American Film and American Culture

3 s.h.

Interdisciplinary study of the arts, social, and economic relationships between film and culture. Recent seminars have examined the decades of the 1920s and the 1930s. Same as 601.32.

Anthropology


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 interactions among societies. Personality was shared canopy of thought and feeling.

Undergraduate Program

An undergraduate major in anthropology provides a solid foundation for careers not only in anthropology but also in a variety of fields involving work with seasons from cultures and subcultural different from one's own, e.g., the health care professions, law, economics and business, political science and government, social work, international affairs, and education.

Majors must take at least 36 credit hours of courses in anthropology, including 12.33 Introduction to the Study of Culture and Society, 113.10 The World, according to the People's 113.11 Introduction to Anthropology and Physical Anthropology, in addition, each student must take one course in art history, or one course in anthropology and one course in biology.
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 practical consideration for admission to the Ph.D. program. The number of semester hours of credit required for the M.A. with thesis varies from 30 to 36, depending upon the student's previous anthropological training. The Ph.D. program requires at least 38 semester hours of graduate work. A 36-hour M.A. degree without thesis is available in conjunction with a minor concentration in museum studies.

The first-year graduate student entering the program with a B.A. degree in anthropology will, in coordination with an assigned faculty advisor, work out a program which will include those distribution requirements for which prior experience or competence can not be demonstrated on the basis of undergraduate coursework taken. First-year students entering the program with a B.A. or M.A. degree in a field other than anthropology normally will be expected to take more courses in anthropology than those who majored in the field as undergraduates. In any case, however, the program will be tailored to the needs and background of the student.

The following distribution requirements exist in the M.A. level: (a) one of the following: 113:140 Social Anthropology, 113:140 Seminar: Social Anthropology, 113:140 History of Anthropology, 113:248 Seminar: History of Anthropology, 113:201 Seminar: Anthropological Theory; (b) one of the following: 113:371 Anthropological Linguistics, 113:372 Language and Culture; (c) 113:168 Archaeology Theory and Method, 113:261 Seminar: Biological Archaeology and Method; (d) 113:285 Biological Anthropology, 113:290 Seminar: Biological Anthropology; (e) one course in social institutions; (f) one course in linguistics [including courses from the Department of Linguistics]; (g) one course in anthropology. No more than nine semester hours of courses outside of anthropology and no more than three semester hours of Independent Study may be applied toward the M.A. degree requirements in anthropology.

Students with previous training in anthropology, whether their undergraduate major, however, will be given an opportunity to waive any part of the above distribution requirements.

Anthropology/Museum Joint M.A. Program

In cooperation with the Museum of Natural History, the Department of Anthropology offers a program of graduate leading to the M.A. degree in Anthropology with a concentration in museology, Defts of exhibit preparation and the general operational procedures of small area zoological museums form part of the student's training. Further information on this option may be obtained by interested candidates from the Department of Anthropology or the Museum of Natural History.

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

At least 72 semester hours of graduate coursework; Demonstration of a reading knowledge of one foreign language; Master's or Ph.D. research skill (i.e., proficiency in a foreign language or a propensity in the use of mathematics, logic, computer programming, geology, or paleontology); Ethnographic or archaeological specialization in a major geographic area approved by the student and Ph.D. advisory committee (e.g., South America, Mexico, Central America, Southeast Asia or the archeological region). Specialization in a major and minor topical area (e.g., kinship or social organization, ethnomedicine, settlement pattern, archaeology, language and culture, religion, social ecology, ethnic anthropology). A written comprehensive examination in the student's areas of specialization; and Preparation and oral defense of a dissertation.

The comprehensive examination ordinarily will be taken when the student's coursework is completed or nearly completed, after the student has completed the requirements and has been satisfied, and before he or she begins fieldwork.
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 has access to its own Archaeological Collections and the University is a charter member of the Human Relations Area Files, an extensively annotated list of source materials on the peoples of the world—their environments, behavioral patterns, social lives and cultures. The HRAF Files and other library resources give anthropology students access to source materials on more than 400 different cultures.

A field laboratory with extensive archaeological research data is maintained in Mexico.

Financial Assistance
A limited number of teaching and research assistantships are available. Application for an award should be made directly to the chair, Department of Anthropology.

Faculty Strengths
Members of the anthropology faculty have studied and lived in the Pacific islands, the Orient, the Caribbean, Mesoamerica, Latin America, and the Subcontinent. During the past three years departmental faculty have conducted field research in Mexico, Guatemala, Venezuela, Mesoestep, the Philippines, Indonesia, Thailand, the Guatemalan Subcontinent, St. Lucia, and Iowa.

Recent research by departmental faculty includes primate trade networks and the role of the drug market in its systems of the emergence of civilization in the Valley of Mexico, patterns of political and economic development of some of the developing countries, comparative ethnographic studies of hunting and gathering groups, paleoanthropological, ethnobotanical investigations of the origins of agriculture and the use and abuse of stimulants in Costa Rica, and agricultural and economic decision making among rural peoples in northern Thailand, and archaeological excavations in Mexico and the Philippines, and Mayan linguistics in Guatemala.

Courses
For Undergraduates Only
113.9 Introduction to the Study of Culture and Society 3 s.h.
Conservative study of culture and group organization may be taken in partial fulfillment of social science core requirements.
113.10 The World's Peoples 3-4 s.h.
Anthropological study of the major distinctive cultural and historical systems of the world, with an emphasis on Africa, Asia, Central America, and Australia. Required of all anthropology majors.
113.11 Introduction to Archaeology and Physical Anthropology 3-4 s.h.
Origins and development of man and society from the earliest known times. Required of man's physical evolution and culture history.
113.12 Language and Humankind 3 s.h.
Language and human thought and the cultural context. Required of man's physical evolution and culture history.

113.20 Introduction to Medieval History 3 s.h.
Prehistoric cultural sequence of time versus the background of modern American primitive thought and current understanding. Not open to anthropology majors.
113.25 Indian History 1-3 s.h.
Super-Indian making in some special area or subdivision in anthropology which student has had basic course.
113.30 Senior Seminar: Anthropology 3 s.h.
For undergraduates majoring in anthropology to present academic honors work selected from required and theoretical issues. Requires six-hour seminar and consent of instructor.
113.87 Honors Project 3-4 s.h.
A seminar and research project, under the direction of an honors thesis. After consultation with the honors advisor, may be pass/fail.

Advanced Courses
General Anthropology
111.68 Asian and the Later Tradition 3-4 s.h.
115.72 Seminar: Anthropology 3 s.h.

115.73 Seminar: Anthropology 3 s.h.

115.92 Seminar: Anthropology 3 s.h.

115.93 Seminar: Anthropology 3 s.h.

Hannah's publication periodical, and that the major title is the Annals of the American Association of the Junior Standing. Not open to any student not in the junior class.
placed on the fine arts and no "commercial" art is offered in the program.

As far as possible the design of academic programs is arranged to meet the individual student's needs, interest as well as general education in studio arts and history can be developed. The major requirement of the undergraduate program is bound and flexible, discouraging specialization. The art history major requires at least an introduction to studio work. The studio major requires development of a foundation in art history and at least six areas of studio art. The aim of the joint curriculum is to give students a balanced understanding of art and aesthetics. It does not focus on particular short-term styles.

Bachelor of Arts

The B.A. candidate in art or art history must earn at least 70 semester hours of credit in non-art courses, but may apply no more than 80 non-art credits toward the 124-credit total required for the degree.

The candidate must meet the cultural portion of the College of Liberal Arts historical-cultural core requirement with 11-32 Form and Theory in the Visual Arts, and either 11-38 Art in the Western World or 11-42 Art in East and West.

Cross-listed courses originating in the School of Art and Art History may not be counted toward fulfilling the general Liberal arts course and hour requirements.

Studio Emphasis

The B.A. degree with an emphasis in studio requires the following courses and credits in art:

History of Art
Four intermediate-level courses 12 s.h.

Studio
1A-1A Colloquium 2 s.h.
1A-3 Basic Drawing 2 s.h.
1A-5 Studio-Specific 2 s.h.
1A-5 Inter-dimensional Conpects 3 s.h.

At least one fundamental course from any of these studio (12 s.h.) areas:

Ceramics
Design

Drawing
Metalworking and Jewelry
Multimedia
Photography
Printmaking
Sculpture

No more than 90 semester hours of credit in art courses the school lists will be counted toward the 124-credit total required for the degree.

Regardless of the number of art credits transferred, transfer students majoring in studio must complete at The University of Iowa a minimum of three-semester hours in art history and 12 semester hours in studio, beyond the basic studio courses and including at least two different studio areas.

Art History Emphasis

Major requirements for the B.A. degree with an emphasis in art history are:

Studio
As advised 9-12 s.h.

Art History
Intermediate and advanced 18 s.h.

Electives
Must raise the total of art courses to a minimum of 30 s.h. and may raise the total to a maximum of 50 s.h. Art courses may be taken beyond the level, but do not count toward the B.A. degree.

Non-art credits must include two or more semesters of a second foreign language and at least 16 s.h. in at least three of these areas:

- Anthropology, classics, drama, history, language, literature, music, philosophy, religion, or sociology.

Art Education

Students seeking the B.A. degree in art education may choose either the studio or art history emphasis, satisfying the requirements described above, and, in addition to the general requirements for teacher certification (see "College of Education"), must satisfy these specific requirements:

7E:143 Methods of Art 3 s.h.
7E:150 Advanced Methods: Art 3 s.h.
7E:151 Seminar on Curriculum and Student Teaching 3 s.h.

The following courses are elective:

7E:157 Aesthetic Education 2 s.h.
7E:159 Aesthetic Education 2 s.h.
1E:259 Art Education and the Museum 3 s.h.

Bachelor of Fine Arts

The B.F.A. degree is not offered with a major in art history. Studio majors must apply to enter the program. Application to title following completion of at least one semester of work in the major studio units, but before completion of 30 s.h. in art.

The B.F.A. requires 92 semester hours of credit in School of Art and Art History courses, 82 in non-art courses. In addition to the general education and major requirements listed above for the B.A. degree with studio emphasis, the B.F.A. candidate must complete three courses in major studio beyond the fundamental course, and must complete at least the second semester of coursework in each of two minor studio areas. Art education majors in the B.F.A. program must meet the same certification requirements as those in the B.A. program.

Undergraduate Transfer Students

Undergraduate transfer students majoring in studio must, at their first registration, show a portfolio to a faculty review committee, which will determine the student's placement or exemption from the sequences of basic studio courses.

Transfer students planning to major in art history should meet with the professor in charge of art history to discuss the student's required minimum registration for courses in art history and studio.

Graduate Programs

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 these two areas. Such a combination generally requires one or two additional semesters. Students admitted to the School for graduate study must subsequently meet clearance requirements to be recognized as candidates for the M.A. or M.F.A. degree.

M.A. in Art History

Art M.A. students in art history are 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. Specific requirements include:

A.B.A. or B.F.A. degree, with at least 18 semester hours of undergraduate work in art history; a minimum of 30 semester hours or graduate-level coursework, with a grade point average of 3.0 or higher; and at least a five-semester intermediate course completed with a grade of B in each of these areas of art history: Ancient (to 300 A.D.); Medieval (300-1300); Renaissance to Baroque (1300-1750); and 19th Century to Modern and Oriental. Course distribution for the M.A. in art history is as follows:

120-204 Seminar: Methodology of Art History and Criticism 3 s.h.
Two art history seminars (with different instructors) 4-6 s.h.
Art history seminar 14-21 s.h.
Studio 0-6 s.h.
Course outside the school 0-9 s.h.

Students with little or no undergraduate studio training are required to take two courses in different studio fields; students with substantial undergraduate studio training will be exempted from the graduate studio requirement. A student preparing to teach in both the art history and studio areas will take 12 to 18 semester hours in studio coursework, with a minimum of 12 semester hours in one subject, in addition to the University's undergraduate requirement for a B.A. major, and will also satisfy the drawing requirement. Studio courses may be taken at an S/U basis.

M.A. candidates with undergraduate majors in art history are encouraged to take courses outside the School. Within the first five 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 Sanskrit, Punic, Mayan, and Chinese, may also be acceptable. This requirement may be satisfied by the Graduate School Foreign Language Test (GSFLT), examination by appropriate university of Iowa language department, satisfactory completion of the first 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.

Qualification for the M.A. degree requires a comprehensive written and oral examination, broadly covering the entire field of art history. The student must take this examination within the two regular scheduled examination days following the semester in which he or she has completed 30 semester hours of graduate work.

The student must prepare either a written thesis, in which three semester hours of credit may be allowed, or a substantial research paper (approximately 30-40 pages in length), which will be read in the Art Library. The research paper may emerge from either seminar or regular coursework.

M.A. in Studio

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

The B.A. or B.F.A. in art as equivalent to that offered at The University of Iowa (undergraduate deficiencies, if any, may be made up concurrently with, but in addition to, graduate requirements); at least 38 semester hours of studio work, including at least 12 semester hours in a major studio subject; a total of at least 21 semester hours in studio courses; 9 semester hours in the History and Theory of art, and up to 8 semester hours of courses outside art and art history; and studio and written thesis. 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 art history minor of 15 semester hours, including 120-204 Seminar: 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 conjunction with the undergraduate hours must satisfy the distribution requirements for art history.

M.A. 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;
Teaching certification in art;
Completion of 38 semester hours of graduate credit, including 18 semester hours of studio and art history in a ratio of two to one, eight semester hours in art education, and 12 semester hours to be selected after the student has completed the program;
An oral and/or written examination in art education and a related field; and
A written thesis based on research in art education or art history or a studio thesis, accompanied by a brief statement of the student's technical, aesthetic and/or psychological approach.

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, metalsworking, and jewelry, or multimedia. The degree requires:

The M.A. degree in art as equivalent to that offered at The University of Iowa;
A minimum of 60 semester hours of graduate work, including at least 12 semester hours in a major studio subject, at least 30 semester hours in a minor studio field, studio field, nine semester hours in art history and theory of art, and eight semester hours in courses outside the School of Art and Art History;
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 written thesis, where such is assigned, by a member of the art history staff; and
The student must prepare a written dissertation consisting of an original scholarly contribution to the field. Up to 6 semester hours of credit toward the art history course requirements may be allowed for dissertation preparation. The dissertation topic must be firmly presented for faculty approval. The student is given a final oral examination on the dissertation.

Admission: Studio

Admission procedures for graduate studio programs include an screening and a final review of applications. First 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, metalworking 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 original drawings. Including figures drawings. MFA majors must submit from 6 to 20 original prints and drawings. Photography majors must submit a selection of original photographs. Sculpture majors should send 6-12 black-and-white photos—slides. ill color is important to their work. Studio applicants must also submit examples of their work in other areas, and must submit three letters of recommendation.

Admission: Art History and Art Education

Applicants to the graduate program in art history must submit a term paper or other examples of ability to write in the field. Applicants in art history must submit both a term paper or other examples of ability to write in the field, and a selection of slides or photographs of their creative work in two studio areas. As applicants must submit three letters of recommendation.

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.

Assistantships and Scholarships

Assistantships paying approximately $3,800 per academic year for 20 hours of departmental duties weekly are awarded to graduate students on a competitive basis. Half-time assistantships are also available. The award of an assistantship entitles the recipient in the fall tuition rates. Scholarship-paying partial or full tuition and entailing no departmental duties require at least a 3.0 cumulative grade-point average. These financial aids are generally awarded to students who have been in evidence for at least one semester, so that faculty members have had an opportunity to observe their performance and potential.

Facilities

School facilities include an art library containing 80,000 volumes; a visual materials library containing 175,000 slides and 80,000 photographs; an art history library; a 360-seat classroom; a program described in the M.A. program description.

The student must take a comprehensive examination in one major unit (six hours) and two minor fields (three hours each) selected by the student in consultation with the advisor selected by the art history faculty. At least one minor field must be in an area different from the major field. One major field may be selected in the minor field; other fields may be in a discipline or disciplines outside the School, e.g., religion, history of philosophy.

The student must prepare a written dissertation consisting of an original scholarly contribution to the field. Up to 6 semester hours of credit toward the art history course requirements may be allowed for dissertation preparation. The dissertation topic must be firmly presented for faculty approval. The student is given a final oral examination on the dissertation.

Admission: Studio

Admission procedures for graduate studio programs include an screening and a final review of applications. First 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, metalworking 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 original drawings. Including figures drawings. MFA majors must submit from 6 to 20 original prints and drawings. Photography majors must submit a selection of original photographs. Sculpture majors should send 6-12 black-and-white photos—slides. ill color is important to their work. Studio applicants must also submit examples of their work in other areas, and must submit three letters of recommendation.

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LIBERAL ARTS/Arts and Art History 53

18:10 Introduction to Ancient Art 3.x.h.
Art and architecture of civilization in the Antiquity, from Mesopotamia to the last century. Prerequisites: 11:02 and 11:09 or 11:15, or equivalent. Same as 14:26.

18:15 Introduction to Medieval Art 3.x.h.
Art and architecture in Europe from 400 to 1400 A.D. Prerequisites: 11:02 and 11:09 or 11:15, or equivalent. Same as 14:26.

18:20 Introduction to Renaissance Art 3.x.h.
Art and architecture in Europe from the 14th to the 16th centuries. Prerequisites: 11:02 and 11:09 or 11:15, or equivalent. Same as 14:26.

18:25 Introduction to Baroque Art 3.x.h.
Art and architecture in Europe from 1600 to 1700. Prerequisites: 11:02 and 11:09 or 11:15, or equivalent. Same as 14:26.

18:30 Introduction to Modern Art 3.x.h.
Art and architecture in Europe and the United States since the early 19th century to the present. Prerequisites: 11:02 and 11:09 or 11:15, or equivalent. Same as 14:26.

18:35 Visual Experience Through Print Medium 2.x.h.
For senior art history majors.

For Undergraduates and Graduate Students

Notes: Courses containing studio work have a prerequisite, or have occassional studio or field trips. For seniors, see the undergraduate section for field trips.

18:15 American Art 3.x.h.
American art and architecture from 1800 to the present. Prerequisites: 11:02 and 11:09 or 11:15, or equivalent. Same as 14:26.

18:20 Egyptian and Mesopotamian Art 3.x.h.
Architecture, sculpture, and architecture of Mesopotamia and Egypt. See 13:10 for credit.

18:25 Greek and Roman Art 3.x.h.
Greek and Roman art and architecture. See 13:10 for credit.

18:30 Byzantine and Islamic Art 3.x.h.
Byzantine and Islamic art and architecture. See 13:10 for credit.

18:35 Art of India 3.x.h.
Indian art and architecture from the 1st century B.C. to the present. Prerequisites: 11:02 and 11:09 or 11:15, or equivalent. Same as 14:26.

18:40 Islamic Art 3.x.h.
Islamic art and architecture in the Middle East. See 13:10 for credit.

18:45 Art of China 3.x.h.
Chinese art and architecture. Prerequisites: 11:02 and 11:09 or 11:15, or equivalent. Same as 14:26.

18:50 Art of Japan 3.x.h.
Japanese art and architecture. See 13:10 for credit.

19:00 Art of Southeast Asia 3.x.h.
Thai, Vietnamese, Chinese, Japanese, and Indonesian art. Prerequisites: 11:02 and 11:09 or 11:15, or equivalent. Same as 14:26.

19:10 Art of Korea and China to 1900 3.x.h.
Art and architecture in Korea and China to 1900. Prerequisites: 11:02 and 11:09 or 11:15, or equivalent. Same as 14:26.

19:20 Art of Japan since 1900 3.x.h.
Japanese art and architecture since 1900. Prerequisites: 11:02 and 11:09 or 11:15, or equivalent. Same as 14:26.

19:30 Art of Korea and China since 1900 3.x.h.
Art and architecture in Korea and China since 1900. Prerequisites: 11:02 and 11:09 or 11:15, or equivalent. Same as 14:26.

19:40 Art of Southeast Asia since 1900 3.x.h.
Art and architecture in Southeast Asia since 1900. Prerequisites: 11:02 and 11:09 or 11:15, or equivalent. Same as 14:26.

19:50 Art and Architecture of the Americas 3.x.h.
Art and architecture of the Americas. Prerequisites: 11:02 and 11:09 or 11:15, or equivalent. Same as 14:26.

19:55 Art and Architecture of Africa 3.x.h.
Art and architecture of Africa. Prerequisites: 11:02 and 11:09 or 11:15, or equivalent. Same as 14:26.

20:00 Art and Architecture of Oceania 3.x.h.
Art and architecture of Oceania. Prerequisites: 11:02 and 11:09 or 11:15, or equivalent. Same as 14:26.

20:10 Art of China 3.x.h.
Art and architecture of China. Prerequisites: 11:02 and 11:09 or 11:15, or equivalent. Same as 14:26.

20:20 Art of Japan 3.x.h.
Art and architecture of Japan. Prerequisites: 11:02 and 11:09 or 11:15, or equivalent. Same as 14:26.
LIBERAL ARTS/Art and Art History 55

1417 Life Drawing I 2 sh.
Drawing human figure in various media. May not be repeated. Prerequisite: 1405.
141879 MA in Drawing 2-3 sh.
Variable drawing theory and introduction to a personal drawing style. Prerequisite: 1417 or equivalent and consent of instructor.
141171 Life Drawing II 3 sh.
Drawing human figure modeled in various media. Prerequisite: 1416 or equivalent and consent of instructor.
141171 Drawing Workshop I 4.5 sh.
Compositional drawing for advanced students; various media. Prerequisites: 2.5 sh. of 1416 or equivalent and consent of instructor.
141171 Drawing Workshop II 4.5 sh.
Compositional drawing for advanced students; various media. Prerequisites: 2.5 sh. of 1416 or equivalent and consent of instructor.
141171 Individual Instruction in Drawing 4 sh.
Intro to Relationship to Representation and Juxtaposition. Basic understanding of line, form, gesture, space, and composition and ability to use drawing tools. Fundamental understanding of material and form. Prerequisite: for all advanced workshops courses. May not be repeated. Prerequisite: 1416.
141164 Advanced Jewelry Making 3 sh.
Development of skills in awareness and application of metals. Advanced sculptural concepts and exploration of materials. Prerequisite: 141123 and 141160, or by permission of the instructor. Prerequisites: 141160 or equivalent and consent of instructor.
141165 Advanced Metalworking 3 sh.
Personal form will be developed by using the existing techniques of drawing, torching, forging, and shell structure construction. Offered spring semester. Prerequisites: 2.5 sh. of 141160 or equivalent and consent of instructor.
141165 Metalworking and Jewelry Making 3 sh.
Embossing and advanced metalworking. Prerequisites: 141160, 141123, 141160, or consent of instructor.
141165 Metalworking Seminar 2 sh.
Advanced problems in metalworking. Prerequisite: 141165 and consent of instructor.
141165 Individual Instruction in Metalworking 4 sh.
An extension of the traditional role of the individual student in the metalworking arena and other materials. Emphasis on conceptual, aesthetic, visual, and performance aspects. May not be repeated. Prerequisite: 1416.
141162 Intermedia I 2-3 sh.
141162 Intermedia II 2 sh.
Combination of 1412. May be repeated. 1416 and consent of instructor.
141162 Musical Composition 3 sh.
Introduction to intermedia activity with experiences in paint, printmaking, sculpture, and multimedia. Prerequisites: 141160 and consent of instructor.
141162 Computer-aided Graphics 3 sh.
Computer graphics: machine capabilities, design planning and programming. Prerequisite: consent of instructor.
141160 Video 3 sh.
Static experimentation and individual projects in black and white and color. Prerequisite: 141160 or equivalent and consent of instructor.
141160 Individual Instruction in Video 4 sh.
Prerequisites: consent of instructor.
141160 Individual Instruction in Textile Design 4 sh.
Prerequisites: consent of instructor.
141160 Painting I 4 sh.
Elementary course in painting. Offered fall semester. May not be repeated. Prerequisites: 141145 and 141171 or equivalent.
141160 Painting II 4 sh.
Elementary course in painting. Offered spring semester. May not be repeated. Prerequisite: 141160.
141160 Painting III 4 sh.
Elementary course in painting. Offered spring semester. May not be repeated. Prerequisite: 141160.
141160 Photography Studio I 4 sh.
Studio photography. Prerequisites: 141160 and consent of instructor.
141160 Photography Studio II 4 sh.
Studio photography. Prerequisites: 141160 and consent of instructor.
141160 Photography 2 sh.
Course in studio photography. Offered fall semester. May not be repeated. Prerequisite: 141160.
141160 Photography 2 sh.
Course in studio photography. Offered spring semester. May not be repeated. Prerequisite: 141160.
141160 Photography 2 sh.
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141160 Photography 2 sh.
Course in studio photography. Offered fall semester. May not be repeated. Prerequisite: 141160.
141160 Photography 2 sh.
10.329 Art Education and the Museum 3 A.
Methods of structuring appreciation experience in museums for children and adults including the curating of tours. Prerequisite: consent of instructor.

10.352 Supervisorship and Fieldwork Development in Art Education 2-6 A.
Methods of supervising art student teaching, including fieldwork and curricula design. Prerequisite: 10.25 or permission of instructor. Same as 17.198.

10.372 Textile Design: Basic Weaving 3 A.
Design and execution of woven textiles through experimentation with colors, fibers and basic weave structures. Prerequisites: 10.194 or 10.195, basic studio art course or permission of instructor. Same as 17.194.

10.572 Textile Design: Forms and Weave 1-4 A.
Two- and three-dimensional design with woven textiles. Prerequisites: 10.194 or 10.195, or permission of instructor. Same as 17.194.

10.194 Introduction to Theoretical Design 3 A.
Studies of areas of design and their relationship to mechanical systems, machine concepts, and the nature of design. Prerequisite: 10.194 or permission. Same as 327.119.

10.195 Introduction to Theoretical Design 3 A.
Continuation of 10.194. Prerequisite: 10.194 and consent of instructor. Prerequisites: 10.194 or 327.119. Same as 327.119.

10.196 Production Design I 3 A.
Principles of drafting, computer graphics and space. Prerequisite: 10.194 and consent of instructor. Same as 17.194.

10.197 Production Design II 3 A.
Principles in lighting, set design, effects and lighting design. Prerequisites: 10.194 and permission of instructor. Same as 327.119.

10.198 Study in Theoretical Design 3 A.
Continuation of 10.197. Prerequisite: 10.197 and consent of instructor. Same as 327.119.

Prerequisite: consent of instructor.

Art Education

16.158 Theories and Issues in Art for the Classroom Teacher 3 A.
Principles, techniques and issues in preparing art for elementary teachers: teaching students to paint, draw, printmaking, sculpture, and craft with materials and tools commonly available in the elementary school. Same as 10.158.

16.168 Concepts for Art Educationists 2 A.
Overview of the educational history of art education in the U.S. and international art education: the relationship of art and education in a variety of cultures and art education experiences.

16.171 Art Education Studio 3 A.
Studies methods course dealing with art teaching in the processes of elementary and secondary school teaching, application of studio methods to the teaching of children. Prerequisites: 10.196, 10.195. Same as 17.192.

16.199 Individual Instruction in Art Education an.
Prerequisite: consent of instructor.

16.323 Science degree in biochemistry requires:
20.528-29 Calculus I-II 8 a.h.
or
29.135-36 Engineering Calculus I-II 8 a.h.
29.17-18 Introduction to Physics I-II 8 a.h.

37.3 Principles of Analytical Biology 5 a.h.
2.1 Introduction to Botany 4 a.h.
or
81.157 General Microbiology 4 a.h.
or
81.1-17 Survey of Immunology 3 a.h.
or
4-15 Principles of Chemistry I 3 a.h.
or
4-14 Principles of Chemistry II 3 a.h.
or
4-16 Elementary Chemistry Laboratory I 2 a.h.
or
4-123-122 Organic Chemistry I-II 8 a.h.
or
4-131 Physical Chemistry I 3 a.h.
or
4-132 Physical Chemistry II 3 a.h.
or
90.135 Physical Biochemistry 4 a.h.
or
4-141 Harmagardt Chemistry Laboratory I 2 a.h.
or
90.120 Senior Undergraduate 0-1 a.h.
99-107 The Chemistry of Biological Materials 3 a.h.
or
99-130 Metabolism 3 a.h.
or
99-151 Molecular Genetics 4 a.h.
or
99-140 Experimental Biochemistry 4 a.h.
or
99-155 Research Independent Study (may be taken for honors) 1-3 a.h.

Biology

The Bachelor of Science program in biochemistry prepares the student for graduate work in biochemistry or related fields. The bachelor of science program lead to a graduate degree in biochemistry or related sciences, or professional degree work in the health sciences.

In addition to the College of Liberal Arts general requirements, the bachelor of
Honors Program

Honors may be earned by special work in 99:140 Experimental-Biochemistry, and in research. In the latter case, work completed in 99:150 Research, Independent Study, and presented to the Department as a written report and an oral presentation in 99:150 Seminar: Undergraduate.

Teacher Certification

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

Graduate Programs, Facilities, 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 chair: Robert L. Holley

Degree offered: B.A., M.S., Ph.D.; N.B.S. in Biochemistry, jointly with the Zoology Department.

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 breeding, 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:

2:1 Introduction to Botany 4 s.h.

One course in each of the following areas (20 s.h. total):

Genetics
2:102 Genetics 3-4 s.h.
2:104 Cytogenetics 3 s.h.
2:160 Genetics and Biogenesis of Cell Organelles 3 s.h.

Physiology and Cell Biology
2:109 Plant Physiology 4 s.h.
2:110 Plant Physiology 4 s.h.
2:114 Structure and Physiology of Plant Cells 4 s.h.
2:125 Developmental Plant Physiology 3 s.h.
2:158 Developmental Physiology Laboratory 2 s.h.

Biology of Vascular Plants
2:111 Plant Diversity 4 s.h.
2:112 Biology of the Local Flora 4 s.h.
2:113 Plant Anatomy 4 s.h.
2:120 Paleobotany 4 s.h.
2:121 Quaternary Paleobotany 2 s.h.

Biology of Non-Vascular Plants
2:106 Physiology 4 s.h.
2:108 Bryology 4 s.h.
2:107 Mycology 4 s.h.

Taxonomy, Ecology and Evolution
2:101 Plant Taxonomy 4 s.h.
2:111 Plant Ecology 4 s.h.
2:112 Plant-Animal Interactions 3 s.h.
2:131 Evolution 4 s.h.

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

Chemistry (see, 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 an 8-week semester of research during the senior year, maintain the grade-point averages required for admission to the program, and pass an Honors examination at the end of the senior year.

Graduate Study

The Department offers graduate training in diverse areas. Many involve interdisciplinary training, and some, such as genetics and ecology, require extensive study outside the Department. For these reasons each student will be assigned a faculty 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 services as teacher's assistant.
The Master’s Degree in Botany

Advanced study may be undertaken with emphasis in anatomy, phytogeny, cell biology, ecology, genetics, development and morphogenesis, physiology, paleobotany, or taxonomy. The master’s degree may be earned by completing at least 30 semester hours of graduate study, including six semester hours in 2225 Research Botany. The preparation of a thesis is optional.

Each student must:
Submit a program of study to be approved by a guidance committee;
Complete at least 16 semester hours of graduate courses in botany, as prescribed by the guidance committee, and including no more than six semester hours of 2225 Research Botany and 2229 Thesis Botany;
Achieve a grade-point average of 3.0 on all courses, other than 2225, attempted up to the time of the final examination; and
Take a written and oral examination covering coursework and research experience.

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 degree requires at least 36 semester hours of graduate study without thesis, or 30 hours with thesis. Nonthesis candidates must take 6-9 s.h. of research, and thesis candidates must take at least 6-8 s.h. of research. Research credit can be earned by taking 2225 Research Botany, 37:199 Introduction to Research and 37:500 Independent Study in Zoology.

Each student must submit a program of study to be approved by the department in which the student is enrolled. The program must include at least 8 s.h. of graduate courses in each of the two departments, exclusive of research, and may include 8-10 s.h. taken in supportive areas including biochemistry, microbiology, geology, and mathematics. The student must achieve a 3.0 grade-point average in all courses other than research attempted at the time of the final examination, and pass a written comprehensive final examination covering the graduate program. For thesis candidates, there is also an oral examination, based mainly on the work reported in the thesis.

Doctor of Philosophy

Specialization may be in any one of the four fields listed under the master’s degree. At least 72 semester hours of graduate credit are required.

The comprehensive examination tests the progress of students in understanding concepts and ideas in vertical divisions of botany, with some correlation in fields closely associated with the research specialty.

The thesis must be submitted to the examining committee at least two weeks before the examination. A final examination consists of an oral defense of the methods, results, interpretations, and conclusions presented in the dissertation.

Graduate Admission

General Requirements

All prospective graduate students should be thoroughly familiar with the requirements of the Graduate College. Applicants should submit Graduate Record Examination (GRE) aptitude test scores with their applications, if possible.

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 inorganic chemistry are usually required of entering students. Course requirements 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. Students entering with a B.A. or B.S. degree from an accredited college or university should submit:

Scores on the GRE verbal and quantitative tests adding up to at least 1100;
A transcript of undergraduate record showing a grade-point average on all courses attempted equal to 3.0; and
Letters of recommendation from at least three of their professors.

Students entering with an M.S. degree should submit:
Scores on the GRE verbal and quantitative tests adding up to at least 1200;
A transcript showing a grade-point average equal to 3.4 on all courses attempted at the graduate level; and
Letters of recommendation from at least three of their professors.

The numerical requirements listed above are not absolute. For example, a GRE score somewhat below the designated number may be compensated for by a high level of academic achievement as an undergraduate or a graduate student.

Special Facilities and Activities

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

There is an excellent departmental library in the building.

A number of research laboratories are equipped with standard and more sophisticated apparatus for research in growth regulation, photosynthesis, paleobotany, molecular genetics, cytogenetics, ecophysiology, physiology, biometry, morphogenesis, and cell biology. There are two transmission electron microscopes in a special laboratory. Students and staff may use the Scanning Electron Microscope Laboratory in the Zoology Building.

An herbarium for research and general study includes collections of more than 200,000 specimens. These standard specimens include extensive collections of seed plants and ferns from Iowa and the Midwest, special research specimens from Mexico and Central America, the Conard herbarium of bromeliads and the Martin collection of fungal and algal molds.

Within a few miles of the campus, a "to-will preserve is available for field trips and experimental projects. A botanical field station at Iowa Lakeside Laboratory ("Estes’ Division") on the site of Lodoga. In northern Iowa after five 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, Mexico and Central America. Qualified graduate students may use the University Computer Center in their research projects.

Courses

Primarily for Undergraduates

2101 Introduction to Botany 4.5 h.
- Cultural experience with biology of plant life, structure, function, reproduction and characteristics in plants. Recommended for students in general science, zoology and those preparing to be teachers. May be discontinued by 210 or 215 to satisfy the natural science core requirement.

2200 Basic Botany 2.5 h.
- Lectures, laboratory and field study of flowering plants, representatives of families common found in this region; their reproductive biology and identification.

2111 Plant Diversity 4.5 h.
- A course of study familiarizing the student with representative plants, their reproductive biology and evolution. Students majoring in biology are strongly encouraged to take this course in their junior year.

2207 Biology of the Local Flora 2.5 h.
- Identification, recognition and reproduction of characteristic flora and vegetation of selected geographic and climatic areas.

2300 Plant Propagation 3.5 h.
- Lectures and laboratory work on plant biology and practical application of propagation techniques. Topics include propagation of woody ornamentals and plants propagated by vegetative methods. Field work under instructors. 2.5 h. WINTER.

2400 Plant Ecology 2.5 h.
- Lecture and laboratory work on plant ecology and evolutionary studies of plant and animal interactions in communities. Field work in selected natural areas.

2500 Plant Anatomy 2.5 h.

2600 Plant Physiology 2.5 h.
- Experimental study of functions in plants: cellular physiology, photosynthesis, respiration, water relations and chemical synthesis. Prerequisite: 2.5 h. PREREQUISITE: 2101.

2701 Plant Pathology 2.5 h.
- Experimental study of plant diseases, nutrition, genetic control and methods of control. 2.5 h. PREREQUISITE: 2101.

2800 Plant Physiology 2.5 h.
- Experimental study of plant nutrition, metabolism, growth and development of seed plants. Prerequisite: 2.5 h. and organic chemistry.

2901 Plant Ecology 4 h.
- Study of vegetation and ecosystems, factors affecting plant communities and interactions between plant and animal biotic communities. 4 h. PREREQUISITE: 2101.

2902 Plant Ecology 2.5 h.
- Lecture and laboratory work in plant ecology and historical studies of plant evolution and plant geography. 2.5 h. PREREQUISITE: 2101.

2920 Field Ecology 2.5 h.
- Study of vegetation and ecosystems, factors affecting plant communities and interactions between plant and animal biotic communities. 2.5 h. PREREQUISITE: 2101.

2960 Field Ecology 2.5 h.
- Study of vegetation and ecosystems, factors affecting plant communities and interactions between plant and animal biotic communities. 2.5 h. PREREQUISITE: 2101.

2970 Experimental Agronomy 2.5 h.
- Normal methods for conducting experiments in agronomy. 2.5 h. PREREQUISITE: 2101.

2980 Plant Taxonomy 2.5 h.
- Experimental study of plant taxonomy. 2.5 h. PREREQUISITE: 2101.

2990 Plant Taxonomy 2.5 h.
- Experimental study of plant taxonomy. 2.5 h. PREREQUISITE: 2101.

3100 Genetics 4 h.
- Principles of genetic inheritance and genetic variation. 4 h. PREREQUISITE: 2101.

3200 Population Genetics 2 h.
- Population genetics. 2 h. PREREQUISITE: 2101.

3300 Evolutionary Genetics 3 h.
- Evolutionary genetics. 3 h. PREREQUISITE: 2101.

3400 Genetical Methods 3 h.
- Genetical methods. 3 h. PREREQUISITE: 2101.

3500 Molecular Genetics 3 h.
- Molecular genetics. 3 h. PREREQUISITE: 2101.

3600 Plant Breeding 3 h.
- Principles of plant breeding. 3 h. PREREQUISITE: 2101.

3700 Plant Pathology 2.5 h.
- Experimental study of plant diseases, nutrition, genetic control and methods of control. 2.5 h. PREREQUISITE: 2101.

3800 Plant Physiology 2.5 h.
- Experimental study of plant nutrition, metabolism, growth and development of seed plants. Prerequisite: 2.5 h. and organic chemistry.

3900 Plant Ecology 4 h.
- Study of vegetation and ecosystems, factors affecting plant communities and interactions between plant and animal biotic communities. 4 h. PREREQUISITE: 2101.

3950 Plant Ecology 2.5 h.
- Study of vegetation and ecosystems, factors affecting plant communities and interactions between plant and animal biotic communities. 2.5 h. PREREQUISITE: 2101.

3980 Plant Taxonomy 2.5 h.
- Experimental study of plant taxonomy. 2.5 h. PREREQUISITE: 2101.

3990 Plant Taxonomy 2.5 h.
- Experimental study of plant taxonomy. 2.5 h. PREREQUISITE: 2101.

3990B Plant Taxonomy 2.5 h.
- Experimental study of plant taxonomy. 2.5 h. PREREQUISITE: 2101.

3400B Genetical Methods 2 h.
- Genetical methods. 2 h. PREREQUISITE: 2101.

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- Genetical methods. 2 h. PREREQUISITE: 2101.

3500B Molecular Genetics 3 h.
- Molecular genetics. 3 h. PREREQUISITE: 2101.

3600B Plant Breeding 3 h.
- Principles of plant breeding. 3 h. PREREQUISITE: 2101.

3700B Plant Pathology 2.5 h.
- Experimental study of plant diseases, nutrition, genetic control and methods of control. 2.5 h. PREREQUISITE: 2101.

3800B Plant Physiology 2.5 h.
- Experimental study of plant nutrition, metabolism, growth and development of seed plants. Prerequisite: 2.5 h. and organic chemistry.

3900B Plant Ecology 4 h.
- Study of vegetation and ecosystems, factors affecting plant communities and interactions between plant and animal biotic communities. 4 h. PREREQUISITE: 2101.

3950B Plant Ecology 2.5 h.
- Study of vegetation and ecosystems, factors affecting plant communities and interactions between plant and animal biotic communities. 2.5 h. PREREQUISITE: 2101.

3980B Plant Taxonomy 2.5 h.
- Experimental study of plant taxonomy. 2.5 h. PREREQUISITE: 2101.

3990B Plant Taxonomy 2.5 h.
- Experimental study of plant taxonomy. 2.5 h. PREREQUISITE: 2101.

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- Molecular genetics. 3 h. PREREQUISITE: 2101.

3600B Plant Breeding 3 h.
- Principles of plant breeding. 3 h. PREREQUISITE: 2101.

3700B Plant Pathology 2.5 h.
- Experimental study of plant diseases, nutrition, genetic control and methods of control. 2.5 h. PREREQUISITE: 2101.

3800B Plant Physiology 2.5 h.
- Experimental study of plant nutrition, metabolism, growth and development of seed plants. Prerequisite: 2.5 h. and organic chemistry.

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- Study of vegetation and ecosystems, factors affecting plant communities and interactions between plant and animal biotic communities. 4 h. PREREQUISITE: 2101.

3950B Plant Ecology 2.5 h.
- Study of vegetation and ecosystems, factors affecting plant communities and interactions between plant and animal biotic communities. 2.5 h. PREREQUISITE: 2101.

3980B Plant Taxonomy 2.5 h.
- Experimental study of plant taxonomy. 2.5 h. PREREQUISITE: 2101.

3990B Plant Taxonomy 2.5 h.
But also for persons interested in all the biological and materials sciences.

Undergraduate Programs

There are two bachelor's degree programs in the Chemistry Department. The Bachelor of Science curriculum is the preprofessional training program for students who intend to find employment as chemists. It also provides the pre-proficiencies for graduate work in chemistry and related sciences. The Bachelor of Arts curriculum provides some cross-contamination in fundamental chemistry but with a wider choice of electives. This degree provides a good background for students who plan to enter medicine, dentistry and related professions, and for students who plan to do advanced work in such fields as biochemistry, microbiology, pharmacology, physiology, medical chemistry, oceanography, geochimistry 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: 4101 Elementary Quantitative Analysis and 11-26 provide an introduction to physical science for the non-science major.

Chemistry majors should attempt to complete courses in organic chemistry, integral calculus, and introductory physics prior to their junior year. A special undergraduate advisor is available to help students design their own program.

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 and 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 pre-proficiencies for graduate work in chemistry or biochemistry. Chemistry Courses

41-13 Principles of Chemistry I-II
41-17 Physical Chemistry Laboratory I-II
41-30 Chemistry Laboratory I-II
41-111-112 Analytical Chemistry I-II
41-131-132 Physical Chemistry II-I
41-141-142 Intermediate Chemistry Laboratory I-II
41-145-146 Advanced Chemistry Laboratory I-II
41-170 Advanced Inorganic Chemistry
41-161 Introduction to Research
41-162 Undergraduate Research

Mathematics

Selected courses to include Integral Calculus (29M.52-56) Engineering Calculus I-II (recommended, 29M52-26 Calculus I-II acceptable.)

Physics

29-17-18 Introductory Physics I-II
29-11-12 College Physics acceptable.

Foreign Languages

(Two semester of German, French, or Russian.)

Electives

Advanced science elective courses plus credit earned in senior research must total a minimum of five semester hours. Advanced science electives may be chosen in the areas of chemistry, mathematics, biochemistry, microbiology, pharmacology, botany, ecology, geology, and physics.

The Bachelor of Arts Degree

The B.A. curriculum in chemistry provides a general education with some concentration in fundamental chemistry but with wider choice of electives. Students electing the 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
4:13-14 Principles of Chemistry I-II
4:18-17 Elementary Chemistry Laboratory I-II
4:55 Chemistry Orientation
4:121-122 Organic Chemistry I-II
4:111-112 Analytical Chemistry I-II
4:131-132 Physical Chemistry I-II
4:141 Intermediate Chemistry Laboratory I
4:143 Advanced Chemistry Laboratory I

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

Physics
29:11-12 College Physics acceptable; 29:17-18 Introductory Physics I-II recommended.

Foreign Languages
A minimum of four semesters in one language, which should 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 departmental examination. Candidates for the M.S. degree are required to obtain minimum grades of "C" in three of these courses or to meet the requirement by examination.

1:170 Advanced Inorganic Chemistry
1:171 Advanced Analytical Chemistry
1:172 Advanced Organic Chemistry
1:173 Advanced Physical Chemistry

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

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 2.5 is requisite for admission to the master's examination. The examination for the M.S. degree without thesis covers graduate coursework.

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

An oral comprehensive examination in defense of a proposed research proposition is requisite to candidacy for the Ph.D. degree. Students who have demonstrated the required competence in the four areas of chemistry and who have maintained a minimum grade-point index of 2.75 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 College.") Students with undergraduate degrees in chemistry, physics, mathematics or engineering are eligible.

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

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 who are admitted receive financial support, and application forms may be obtained by writing to the Department of Chemistry. Most assistantships and other appointments for the following academic year are filled by April 1, but there are occasional openings at the beginning of the second semester.
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 law, history, art, philosophy and religion, as well as for advanced work in classics. Recent graduates have become secondary and university teachers, lawyers, doctors, librarians, museum curators and bankers. 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, and which must include the following courses or their equivalents:

14:1-2 Elementary Greek 8 s.h.
14:11-12 Second-year Greek 8 s.h.
14:121-122 Homer and Homeric Ill 8 s.h.
14:161 Greece and Persia 3 s.h.
14:162 Fifth-century Athens 3 s.h.
14:171 Elementary Greek Composition 3 s.h.

A student majoring in Greek graduate knowing not only how to read the Greek language, but also knowing some of the major works of Greek literature, and something of the history of ancient Greece and the Near East of the seventh through the fifth centuries B.C., when most of the modern notions of political, artistic and social life began.

Major in Latin

Thirty semester hours minimum are required, of which 24 must be in Latin language courses, and which must include the following courses or their equivalents:

20:1-2 Elementary Latin 8 s.h.
(20:15 Latin Review is equivalent to 20:1 )
20:16-17 Intermediate Latin 8 s.h.
20:80 Age of Cicero 3 s.h.
20:80 Age of Augustus 3 s.h.
20:171 Elementary Latin Composition 3 s.h.

Two Latin language courses, 100 level or above 6 s.h.

A student majoring in Latin will graduate knowing how to read Latin as well as understanding some aspects of the Roman republic and empire when Rome established its hegemony over the Mediterranean basin, laid the foundation for the Western world, and transmitted the culture of Greece to the West.

Major in Classics (Greek and Latin)

Thirty-six semester hours minimum are required, of which 30 must be in Greek and Latin language courses, and which must include 14:1-2, 14:11-12, 20:1-2, and 20:16-17, or their equivalents. The student will then choose a language of concentration and will take at least the third-year courses (14:121-122 or 20:80-81) and the elementary composition course (14:171 or 20:171), or their equivalents, in that language of concentration.

Major in Ancient Civilization

(Sponsored by the School of Art and History and the departments of Classics, History, and Religion)

The major concentrates on the ancient civilization of the Mediterranean world and draws on courses currently offered by various departments of the University. It is not primarily a preparation for a graduate degree program; nevertheless, it could be used as a very sound basis for preparation for law school, the second-year medical or graduate college levels. In addition to the normal college requirements for the B.A. degree, the following are the specific requirements of the major:

Ancient art 6 s.h.
Ancient history 6 s.h.
Ancient philosophy or religion 6 s.h.
Classics—or other courses in translation or upper-division undergraduate courses in Latin and Greek 6 s.h.

Appropriate courses in art, history, philosophy, religion or linguistics 3 s.h.
Senior seminar 3 s.h.

Core Requirements

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

Honors
For exceptional seniors who attained a 3.5 grade-point average in their first three years of college course work, two courses may be offered in Honors 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 classical may include in their program no more than six semester hours of courses numbered 101-180 and/or six semester hours of courses numbered 181-199, 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 who have had no Greek are normally expected to include at least elementary Greek in their programs. In addition, the course 14/201 Proseminar: Introduction to Advanced Study (three semester hours) is required. Special programs with the department may be arranged in cases where students 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 in a reading list prepared by the student and his or her advisor and approved by the Department. A tested reading knowledge of German and French; passing written comprehensive examinations on ancient history, on Greek and Latin literature, and on a special field or author, together with a one-hour general oral examination; and writing and defending a dissertation embodying original research or interpretation of a classical subject. Required courses are:

* 14/204-205 Rapid Readings in Greek
  6 s.h.
* 20/204-205 Rapid Readings in Latin
  6 s.h.
* 14/172 Advanced Greek Composition
  3 s.h.
* 20/172 Advanced Latin Composition
  3 s.h.

Ancient art above 200 level
14/201 Proseminar: Introduction to Advanced Study
20/205 Sanskrit I or
20-203 Indo-European Philology
3 s.h.
14-206 Greek Paleography
3 s.h.
14/281-282 Greek Seminar
6 s.h.
20/281-282 Latin Seminar
6 s.h.

(May be satisfyed by examination.)

(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 some valuable collection of coins, vases and frescoes in bronze from Mycenae, Pompeii and Hellespont. The University is a supporting institution of the American School of Classical Studies at Athens, the American Academy in Rome, and the American School of Archaeology in Istanbul, thereby making the facilities of those schools available to its faculty and graduates. The University is also a contributing member of an international group which is sponsoring the uncovering and publication of information about the ancient mosaic of Tunis. Annually a team from the University goes to Tunisia to work on this project.

Courses
Greek

For Undergraduates Only

Student wishing to socialize the B.A. foreign language requirement by studying Greek should take 14-150 Introductory Greek before the junior year.

14/1 Elementary Greek
F s.h.
Fundamentals of Attic Greek and basic concepts of Greek civilization.

14/2 Elementary Greek
F s.h.
Continuation of 14/1, which is a prerequisite. Selections from Greek authors are read.

14/8 New Testament in Greek
F s.h.
Readings of selections from the New Testament, particularly the gospels. Prerequisites: 14/1 or 14/12.

14/13 Salvation-Themes Greek
F s.h.
Readings of selected texts from the Gospel of St. John and Pauline. Prerequisite: 14/1 or 14/12.

14/12 Special-Topics Greek
F s.h.
Commencement of 14/8, which is a prerequisite.

For Undergraduates and Graduates

14/121 Human and Historical I
3 s.h.
For first-year Greek students; sections from Homer’s Il and Odyssey, and from Herodotus’ Histories and Thucydides’ History in Greek complete works read in English.
14/122 Human and Historical II
3 s.h.
Companion of 14/11, which is a prerequisite.
14/151 Greek and Pente.
3 s.h.
For students in the fourth year of Greek, to examine the Helenistic war, course of the war, and immediate aftermath. Analysis of Pente and sestuhoria from Philip’s war to Antigonus’ death. Readings are in Greek, supplementary readings in English.
14/152 Greek and Alexander
3 s.h.
Companion of 14/11, which is a prerequisite.
14/181 Greek and Pente.
3 s.h.
For students in the fourth year of Greek, to examine the Helenistic war, course of the war, and immediate aftermath. Analysis of Pente and sestuhoria from Philip’s war to Antigonus’ death. Readings are in Greek, supplementary readings in English.
14/171 Elementary Greek Composition
3 s.h.
Practice of morphology and syntax and Greek sentence structure; composition of short passages in Greek.
14/172 Advanced Greek Composition
3 s.h.
Practice in writing idiomatic Greek prose on styles of Xenophon and Demosthenes as models.
14/185 Ancient and Modern Civilization
3 s.h.
Subject matter changes annually. Spring 1979 will be devoted to medieval and modern civilization.
14/196 Special-Topics Seminar
3 s.h.
Teach a special subject or a special topic of a less symmetrical nature. May be repeated.
14/198 Independent Study
1-3 s.h.
Supervised individual study. For advanced students who are not majors in the Department. May be repeated.
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 consent both for two of three national literatures and for the theory and general study of literature as a single phenomenon. The student in consultation with faculty advisers combines courses in the Program and in the individual departments to design a coherent course of study.

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 international areas are selected by the student in consultation with appropriate faculty members.

Some typical critical and comparative areas are:

European Renaissance
Romanticism
Structuralism and post-Structuralism
Narrative theory
Symbolic texts and modern literature
Post-Kantian aesthetology and literature
Semiotics and the theory of social interaction
Literature, History and Criticism
Library-critical and psycho-analytic theory

Dissertation
The Ph.D. dissertation should demonstrate the candidate's ability to write a substantial

House of scholarship or criticism. A translation of a work of sufficient significance and linguistic complexity, preceded by a critical introduction, may be acceptable as a dissertation. The final oral examination centers on the dissertation and its background.

Admission
A study of literature across linguistic boundaries requires special preparation 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 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
46:108 European Literature of the 19th Century 3 s.h.
46:109 American and national perspectives in literary theory, history, and criticism 3 s.h.
46:110 History of European Literature I 3 s.h.
46:111 History of European Literature II 3 s.h.
46:112 History of European Literature III 3 s.h.
46:113 History of European Literature IV 3 s.h.
46:114 History of European Literature V 3 s.h.
46:115 History of European Literature VI 3 s.h.
46:116 History of European Literature VII 3 s.h.
46:117 Contemporary Scene to Poetry 3 s.h.
46:118 Modern Poetry 3 s.h.
46:119 Contemporary Scene to Poetry 3 s.h.
46:120 Literature and Society 3 s.h.
46:121 Literature and Aesthetics 3 s.h.
46:122 Literature and Anthropology 3 s.h.
46:123 The Literary Tale 3 s.h.
46:124 The Literary Tale 3 s.h.
46:125 East-West Literary Relations 3 s.h.
46:126 Literary Translation 3 s.h.
46:127 Literary Translation 3 s.h.
46:128 Literary Translation 3 s.h.
46:129 Literary Translation 3 s.h.
46:130 Literary Translation 3 s.h.
46:131 Literary Translation 3 s.h.
46:132 Literary Translation 3 s.h.
46:133 Literary Translation 3 s.h.
46:134 Literary Translation 3 s.h.
46:135 Literary Translation 3 s.h.
46:136 Literary Translation 3 s.h.
46:137 Literary Translation 3 s.h.
46:138 Literary Translation 3 s.h.
46:139 Literary Translation 3 s.h.
46:140 Literary Translation 3 s.h.
46:141 Literary Translation 3 s.h.
46:142 Literary Translation 3 s.h.
46:143 Literary Translation 3 s.h.
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46:145 Literary Translation 3 s.h.
46:146 Literary Translation 3 s.h.
46:147 Literary Translation 3 s.h.
46:148 Literary Translation 3 s.h.
46:149 Literary Translation 3 s.h.
46:150 Literary Translation 3 s.h.
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Undergraduate Programs

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

The Department offers two programs leading to the B.A., one primarily for those interested in studying the culture and civilization of traditional and modern Asia, and the other intended for those who wish to concentrate on developing competence in one of the Asian languages offered. Graduates of either program will find careers readily available in government, banking and commerce in America and Asia.

The programs will also provide an excellent background for advanced study in literature, history, art, religion, political science, geography, anthropology, or sociology. Career opportunities in business, government, and teaching are plentiful at present and there is every indication that they will increase markedly in the next decade as trade and cultural exchanges with Asia develop further.

Undergraduate majors are exempted from the literature core requirement of the College of Liberal Arts; the foreign language requirement is met by study of an Asian language.

The Program In Asian Studies

This is a multidisciplinary program designed to introduce students to East and South Asian cultures, both modern and traditional, and to contemporary political and social problems in Asia. Asian historians join selected faculty in language and literature in teaching the courses. Each student selects a single area (e.g., China, Japan, or South Asia) upon which to concentrate for the study of civilization.

Required courses:
39:55-56 Civilizations of Asia 8 s.h.
39:10-20 Asian Humanities 8 s.h.
39:101 First Second Year Chinese 24 s.h.

Comparative Seminars

These seminars are devoted to aspects of one foreign language that are peculiar to all selections.
48:402 Seminar in Indonesian and Malay 3 s.h.
48:432 Seminar in Sanskrit 3 s.h.
48:433 Seminar in Sciences 3 s.h.
48:434 Seminar in Semitic Languages 3 s.h.
48:435 Seminar in South Asian Languages 3 s.h.
48:436 Seminar in Southeast Asian Languages 3 s.h.
48:437 Seminar in Sumerian 3 s.h.
48:438 Seminar in Three African Languages 3 s.h.
48:439 Seminar in Viking Studies 3 s.h.
48:440 Seminar in Welsh 3 s.h.
48:441 Seminar in Yiddish 3 s.h.
48:450 Seminar in Middle Eastern Languages 3 s.h.
48:451 Seminar in Jewish Studies 3 s.h.
48:452 Seminar in Islamic Studies 3 s.h.
Graduate Study

M.A. Program in Asian Civilization

Graduate study in Asian Civilization is designed to prepare students for careers in high school teaching, government service, or commerce where a knowledge of an Asian language and a broad regional background would be helpful. It also provides excellent preparation for advanced study on the doctoral level.

To receive an M.A. the student must complete 30 semester hours of coursework. All students are required to write an M.A. thesis in English using Chinese, Japanese, or Indian language sources. The thesis may count for 4 semester hours of the 30 required. All students must maintain a 3.0 G.P.A.

Students will be required to demonstrate language competence by passing a departmental examination at the conclusion of their program. Language competence for students of Chinese and Japanese will be at the level of the completion of four-year modern and first-year classical language; for students of premiodem South Asia, at the level of the completion of third-year Sanskrit; for students of modern South Asia, at the level of the second-year Sanskrit.

In addition, students will be examined on the History of China, Japan, or South Asia, and in two appropriate areas from among the following options:
- Chinese Anthropology
- Chinese History
- Chinese Linguistics
- Chinese Literature
- Chinese Philosophy
- Chinese Art
- Chinese Religion
- Japanese Anthropology
- Japanese History
- Japanese Literature
- Japanese Politics
- Japanese Art
- Japanese Religion
- South Asian History
- South Asian Literature
- South Asian Art
- South Asian Social Sciences
- South Asian Religion

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 modern language work, and would include 26 semester hours of coursework as listed, and the four semester hours to the M.A. thesis. All candidates are expected to fulfill the general requirements of the Graduate College.

Graduate Admission

Applicants for admission must meet the general admission requirements of the Graduate College, except that a minimum grade-point average of 2.75 is required for conditional admission, 3.0 for regular admission. In addition, applicants must submit a specimen of their writing—such as a term paper, seminar paper, or graduation thesis—to the Department of East Asian Languages and Literature. All applications for graduate awards for the following academic year are due March 15. 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 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 30,000 books, periodicals, and microfilm. 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 in contemporary society. The Library regularly acquires publications from Inde in Pali, Sanskrit, and English.

Courses

Undergraduate Language Courses

201 Chinese for Non-Majors I 4 s.h.

Introduction to Chinese through aural-oral instruction in writing characters; Chinese culture introduced through folk stories and current events.

202 Chinese for Non-Majors II 4 s.h.

Further study of spoken Chinese with more emphasis on the written language. Continuation of 201, which is a prerequisite.

205 Chinese for Non-Majors III 3 s.h.

Continuation of 202, which is a prerequisite.
204 3rd Year Japanese 5 s.h.
     Reading of more difficult modern Japanese, with further practice in speaking and writing. Continuation of 304, which is prerequisite. Fall.
205 3rd Year Japanese 5 s.h.
     Continuation of 305, which is prerequisite. Spring.

Language Courses for Graduate Students

208 3rd Year Classical Chinese 5 s.h.
     Introduction to classical Chinese of the late Zhou and early Warring States periods will be primarily from Chou-lu, Warring States, and the Warring States period and will stress grammar and vocabulary. Reading and oral translation. Fall; Prerequisite: 208.

209 3rd Year Classical Chinese 5 s.h.
     Grammar and vocabulary in classical Chinese. Fall; Prerequisite: 208.

210 3rd Year Classical Chinese 5 s.h.
     Further readings in classical Chinese literature. Spring; Prerequisite: 208.

211 3rd Year Classical Chinese 5 s.h.
     Reading of advanced classical Chinese literature. Spring; Prerequisite: 208.

212 3rd Year Classical Chinese 5 s.h.
     Texts for advanced students of Buddhist prakrits. Prerequisite: 208. Same as 300.

214 3rd Year Classical Chinese 5 s.h.
     The course aims at further development of language proficiency through reading of modern texts. Fall; Prerequisite: 208 or equivalent as demonstrated by oral and written examinations.

215 3rd Year Classical Chinese 5 s.h.
     Further readings in classical Chinese literature. Spring; Prerequisite: 208.

217 Advanced Classical Chinese 5 s.h.
     Readings in literary and historical texts of various periods. Continuation of 210 and 212, which are prerequisites.

218 Literature Courses in English Translation

219 3rd Year Japanese Literature 5 s.h.
     Literature of ancient India in translation: epic, tales and popular tales. Fall.

220 3rd Year Japanese Literature 5 s.h.
     Literature of ancient India in translation: novel, poetry and drama. Spring.

221 Survey of Chinese Literature I 3-4 s.h.
     Development of the major genres of Chinese literature from the 11th century B.C. to 17th century A.D., with emphasis on poetry. Fall.

222 Survey of Chinese Literature II 3-4 s.h.
     Development of the major genres of Chinese literature from 17th century A.D. to present, with emphasis on fiction and drama. Spring.

223 Contemporary Chinese Literature 3 s.h.
     Significant writers of the late 20th century. This course will survey themes, trends, and styles in Chinese fiction. Prerequisite: 222 or 224.

224 Chinese Poetry 3 s.h.
     Works from the "Golden Age" of classical Chinese poetry (7th-13th centuries).

225 Chinese Drama 3 s.h.
     The development of classical Chinese drama. A historical survey. Same as 222.

226 The Library Tips 3 s.h.
     Brief readings in short stories: a study of theme, structure, and rhythm: characteristics of the tale. Same as 160, 155, 150, 155.

227 East-West Library Tips 3 s.h.
     Reading of Asian and Western literary works: exploration of the capability of current critical ideas to both: same as 148, 158, 158.

231 Seminar in Chinese Literature 3 s.h.
     Seminar in Chinese literature. Same as 232.

232 Seminar in Japanese Literature 3 s.h.
     Seminar in Japanese literature. Same as 231.

233 Medieval Japanese Literature 3 s.h.
     Significant characteristics of Japanese poetry, prose, drama, and shunga in the courtly and semi-courtly periods. Spring.

234 Early Modern Japanese Literature 3-4 s.h.
     Poetry, fiction and drama of the Tokugawa and Edo periods. Fall.

235 Medieval Chinese Literature 3 s.h.
     Significant developments in poetry, fiction and drama in the T'ang and Sung periods. Spring.

236 Chinese Civilizations—Instruction in English

237 4th Year Japanese Literature 5 s.h.
     Literature of the Japanese world, with emphasis on modern literature of Japan. Same as 300.

238 4th Year Japanese Literature 5 s.h.
     Literature of the Japanese world, with emphasis on modern literature of Japan. Same as 300.

239 4th Year Japanese Literature 5 s.h.
     Literature of the Japanese world, with emphasis on modern literature of Japan. Same as 300.

240 4th Year Japanese Literature 5 s.h.
     Literature of the Japanese world, with emphasis on modern literature of Japan. Same as 300.

241 4th Year Japanese Literature 5 s.h.
     Literature of the Japanese world, with emphasis on modern literature of Japan. Same as 300.
Individual Study for Advanced Students
36.117 Rosen Tidwell

36.121 Miskovsky Tutorial

36.125 Senior Rosen Thesis

36.200 Methods of Teaching Chinese

36.205 Methods of Teaching Japanese

36.211 Individual Chinese for Advanced Students

36.213 Individual Japanese for Advanced Students

36.214 Individual Seminars for Advanced Students

36.215 A. A. Thesis

36.216 A. A. Thesis

Economics

Department Chair: Calvin C. Beeler

Direct: A. M. A. M. J. M. D. H. M. J. M.

Economics is concerned with the operation 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 banking, income and consumption, government expenditures and taxation, prosperity and depression, inflation and unemployment, trade and labor unions, and hundreds of other matters which intimately affect the way people live. Economics seeks to develop an understanding of how complex economic systems work, along with providing training in the principles of economic analysis which can be applied to a wide range of economic problems. Study of economics is desirable simply from the standpoint of being an informed citizen capable of exercising rational choice at the voting booth. Accordingly, the Department offers a wide range of coursework to meet the needs of the nonmajor 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. Economics is also considered excellent preparation for law school and for graduate study in such fields as business management, public administration, health and hospital administration, urban and regional planning, transportation, journalism, political science and statistics.

The Department offers three undergraduate degrees—the Bachelor of Science and Bachelor of Arts in the 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 fields of accounting, finance, marketing, business law and management.

The B.S. program has a more quantitative content than the B.A. program, and is designed to prepare the student for graduate work in economics or related business and technical fields. The B.S. requires one year of foreign language, but 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

225:47 Quantitative Methods I

225:8 Quantitative Methods II

Courses in Economics

20 semester hours of credit in 100-level courses, including 6E:103 Microeconomics and 6E:105 Macroeconomics.

Most 100-level courses in economics have prerequisites of either 6E:1 Principles of Economics or 6E:2 Principles of Economics, or senior standing; 6E:1 and 6E:2 satisfy the social science core requirement. Credit gained in 6E:100 Price, Employment and Production Theory cannot be counted toward the 20-semester hour 100-level economics courses required for the B.A. degree.

Program for the B.S. Degree

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

22M:25-28 Calculus I-III

225:120 Probability and Statistics

6E:102 Statistical Methods in Economics

30 semester hours of credit in 100-level economics courses, including 6E:103, 6E:105 and 6E:94 Methods of Quantitative Economics.

Credit earned in 6E:100 Price, Employment and Production Theory cannot be counted toward the 24-semester 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. Honors students must complete four 100-level economics courses including 0E:103 and 0E:105 before their senior year. The 6E:197 Senior Thesis in Economics for four hours of credit in both semesters of their senior year, complete a senior thesis under direction of an economics faculty member of professional rank and take (for the final semester of the program) an examination covering the 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.

Coursework for Nonmajors

6E:1-2 Principles of Economics satisfies the College of Liberal Arts social science core requirement, and provides an introduction to specialized topics of upper division courses. 6E:7 Contemporary Economic Problems and Policy gives students with limited knowledge to economics an opportunity to examine the economics behind some current policy issues. Coursework in economics is required to be related to majors in many other fields—for example, in environmental studies, 6E:103 Economic Growth and Environmental Decay and 6E:103 Microeconomics, or in political science, 6E:115 Economics of the Government Factor and 6E:141 Industrial Organization. A number of students combine related interests by pursing double majors in economics and, for example, computer science, geography, history, mathematics, political science, sociology or statistics.

Graduate Programs

The Department offers graduate instruction in the Master of the College and the Doctor of Philosophy degrees. Each degree program has a separate theory and quantitative core enhanced by a set of field courses.

The M.A. degree program is designed to provide breadth in economic training without the requirement of specialization. The degree is usually completed within 18 months.

Areas of concentration offered by the department include economic development, econometrics, behavior and health economics, history of economic thought, industrial organization, international economics, labor economics, economic theory and mathematical economics, monetary economics and policy, public finance, and regional and urban economics.

The Ph.D. program is designed to provide students with rigorous training in the areas of microeconomic theory, macroeconomic theory, mathematical economics, and econometrics. In addition, the student selects a major area for in-depth study and specialization. The usual time required to complete the Ph.D. program is four years.

Each year the department offers a stimulating seminar program involving eminent economists from other universities and government, as well as presentations by faculty and student members of the department.

Courses

All courses offered in the Department are listed in the College of Business Administration section of the Catalog.

Education

See “College of Education” section.

English

Department Chair: Richard H. Jones


Postdoctoral Fellows: S. D. D. A. In letters, N. A. A. M. S. A., Ph.D.

Undergraduate Programs

The English Major

The broad purpose of the major in English is to provide a program of humanistic learning focused on the study of language and literature and the discipline of writing.

The immediate aim of the study of literature is to help students read the literary work in a variety of ways and to aid them in relating the work to other aspects of its culture.

The chief aim of the study of language is to help students acquire historically and analytically the potentialities and limitations of their own language.

The chief aim of the training in writing is to help students explore and define their own experience, especially their own writing. This training may involve either artistic or functional writing—both in, either case the immediate goal is written expression that is both precise and forceful.

The English major is valuable training for every type of position calling for order 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 instructing law and medicine; working for publishing firms, newspapers and book publishers; and for state and federal governments. Many others hold responsible positions in business and industry.

The only absolute requirement for the major in English is 30 hours of work in courses offered by the Department of English, including at least nine semester hours of work in courses dealing principally with literature written before 1800. In practice an English major ordinarily takes about 45 semester hours in English. At least 15 hours of coursework in English must be taken in residence.

With their advisors, freshmen work out programs which seem best to meet their specific needs and interests. Normally they begin with courses emphasizing putting down a good start in English. 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 history, and printing and design. Concurrently they typically select work in the history and philosophy and the English language and literature for advanced training in writing. The latter may be imaginative writing (poetry, fiction, play), formal writing (composition, argument, technical reports, writing for social action) and the use of literary and technical styles. To buttress their study in the Department, English majors are encouraged to take as much work as possible in such fields as history, classical and modern foreign literatures, speech and the fine arts. Students planning to teach in primary or secondary schools will, of course, have to add approved courses in education.

As soon as students decide to undertake a major in English, they should consult with the
work must be submitted to the Write Workshop no earlier than a week before registration and no later than the last day of registration.

The Department offers a flexible undergraduates program for students planning to teach English in elementary and secondary schools. Aside from the necessary courses in education, there are no requirements except 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—or rhetoric or literary history or all of these. Their literary study should emphasize a range of close reading experiences in different kinds of literature, as well as the methods for exploring a literary text. Especially, they should remember the requirements of a broad educational experience for their own study and as a basis for understanding the interests of their students.

Finally, they should remember that an undergraduate degree represents minimal training for good teachers, so they should plan a program which will permit graduate study at a later time.

English majors who are working for teaching certification must devote one semester of the senior year to professional training apart from coursework in the English Department. The Department also participates in a joint major in English and elementary education. Those interested in such a program should consult their advisers in elementary education.

Students who seek certification for secondary teaching in fields other than English may seek minor certification in English. Such certification is particularly appropriate for students majoring in speech or journalism. Such a student must complete 20 semester hours of English, exclusive 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 a university in the British Isles during the summer following the student's junior year. Applications must be submitted to the professor in charge of the scholarship committee no later than February 25 for the following summer. The application must include a list of the English courses the applicant has completed, a statement of the applicant's interests in writing to study abroad, and a letter from the student's University of Iowa English course, including the instructor's comments.

Graduate Programs

Master of Arts

The aims of the Master of Arts program are the same as those of the undergraduate programs, except, of course, that the M.A. program is more demanding. It provides students to teach English in high schools and community colleges, to continue advanced study as candidates for the doctoral degree, some students undertake the M.A. program for general personal development.

The program requires at least 36 semester hours of graduate credit, at least 24 of which must be earned in residence; one departmental seminar with at least a "B" grade, and satisfactory 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 requirement 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. It is designed to meet 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 who wish to improve their writing 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 5 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. This plan must be approved by an advisory committee which will ensure that the assumptions 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 project; and must receive the committee's approval of the completed thesis.

Work on the thesis may not be counted toward the 30 hour minimum for course 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 three hours in linguistics, 12 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.

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 translations, poetry, fiction or plays. The requirements are flexible, but usually include 48 semester hours of graduate credit, earned chiefly in the Writer's Workshop: a book-length collection of poems or short stories, a novel, a play, or a work of creative writing in some other appropriate form; and satisfactory 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 M.F.A. in Creative Writing emphasizes the discipline of translation, viewed as a distinct literary genre. Student programs are individually structured, and are designed to develop skills in source and target languages and cultures. The course also seeks 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 translated poems, 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, Department attempts to prepare Ph.D. candidates for the teaching, publication, and service required of faculty members. The doctoral 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 Romance, Comparative Literature, English and creative writing.

The Department also offers the Ph.D. with a concentration in modern letters, which provides the student an opportunity to focus part of his work on an interdisciplinary area. The term "interdisciplinary" may be interpreted broadly to mean a study of another foreign language, film, drama, or study of contemporary culture.

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; in mastery of a single foreign language and its literature; distribution of coursework, depending upon needs; in historical areas, criticism and linguistics; two seminars: a part-written, part-processed examination in three areas, two of which are usually historical genres of English and American literature; a dissertation, which may be either exploratory 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 Russian and Literature Core programs of the College of Liberal Arts.

Interested students should write to the Director of Graduate Admissions and Doctoral Admissions in English for more detailed explorations.

Financial Aid

Aid is available to graduate students in the form of fellowships, stipends and teaching and research assistantships. It is awarded on a competitive basis to the best qualified applicants, without regard to need, race, sex or other non-qualitative criteria. Since sources are limited, normally fewer than half the applicants for aid receive it. New students are at something of a disadvantage, and should expect to support themselves throughout the first year. Application for aid may be made by 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 applicants for admission to any graduate program in English must meet the general requirements for admission to the Graduate College, and must submit at least two letters of support for their admission. In addition, M.F.A. applicants should submit 2-3 samples of their poetry or fiction to the Division of the Creative Writing Program, and Ph.D. applicants should submit a representative sample of their writing—a course paper, seminar paper or thesis chapter—to the Department's associate director of graduate study.
Writing Programs

For the past thirty years, Iowa has exercised strong national leadership in many areas of the teaching of writing. It was the first university, in 1932, to accept creative experiences as a graduation requirement.

Founded in 1854, the Writers Workshop was a pioneer venture in the field of creative writing and numbers scores 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 lecture and readings.

The International Writing Program, founded in 1996, brings numbers of prominent 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 and 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 spring of 1979, the University of Iowa will be conducting an Institute on Writing, a project for the professional development of college and university directors of freshman writing programs. The Institute is a five-year project, jointly funded by the National Endowment for the Humanities and the University. The presence of the Institute will serve to expand the resources available to students in the area of writing, and enable the development of new and distinct instructional opportunities for students to participate in regular course offerings in writing.

Special Facilities

The University Library is strong in all areas of English and American literature, and is especially noteworthy for its collection of American periodicals and its holdings in 19th and 20th century works.

The Department provides a wealth of opportunities for student involvement in critical, scholarly, and creative publications. The Iowa Journal of Literary Studies is a quarterly publication edited by graduate students, in which the emphasis is on featuring the creative and scholarly work of students in English and related areas. Opportunities are also available for editorial experience through the Iowa Review, Pfolagical Quarterly, and the Windover Press.

Courses

Individual descriptions for the English courses listed below are not included because the context and emphasis of many courses vary significantly from semester to semester. Detailed course descriptions for all offerings in a given semester are available in the English Department Office. A complete catalog of offerings is available in the English Department Office.

For Undergraduates

<table>
<thead>
<tr>
<th>Lecture course</th>
<th>Open to undergraduates who have met the prerequisite requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>04 Modern Poetry</td>
<td>3.0 s. h.</td>
</tr>
<tr>
<td>02 Modern Prose</td>
<td>3.0 s. h.</td>
</tr>
<tr>
<td>03 Modern Drama</td>
<td>3.0 s. h.</td>
</tr>
<tr>
<td>05 Medieval and Renaissance Literature</td>
<td>3.0 s. h.</td>
</tr>
<tr>
<td>01 Shakespeare</td>
<td>3.0 s. h.</td>
</tr>
<tr>
<td>05 Creative Writing</td>
<td>3.0 s. h.</td>
</tr>
</tbody>
</table>

Introductory Courses in Close Reading of Texts

Limited-enrollment discussion courses in which a small number of topics are read carefully to illustrate key issues in literary history and interpretation.

For Graduate Students

<table>
<thead>
<tr>
<th>Lecture course</th>
<th>Open to graduate students, other graduate students and graduate students in associated departments</th>
</tr>
</thead>
<tbody>
<tr>
<td>05 Modern Poetry</td>
<td>3.0 s. h.</td>
</tr>
<tr>
<td>02 Modern Prose</td>
<td>3.0 s. h.</td>
</tr>
<tr>
<td>03 Modern Drama</td>
<td>3.0 s. h.</td>
</tr>
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<td>3.0 s. h.</td>
</tr>
<tr>
<td>01 Shakespeare</td>
<td>3.0 s. h.</td>
</tr>
<tr>
<td>05 Creative Writing</td>
<td>3.0 s. h.</td>
</tr>
</tbody>
</table>

Examinations

Examinations are given at the end of the semester. They are comprehensive in nature, covering all material discussed in class.

Honors

The University of Iowa offers a variety of honors programs and options for students who wish to pursue their studies at the highest level. These programs are designed to provide an enriched academic experience and to prepare students for graduate study or professional careers.

Literature, Language, and Cultures

For Undergraduate Students

<table>
<thead>
<tr>
<th>Lecture course</th>
<th>Open to undergraduate students, other graduate students and graduate students in associated departments</th>
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</table>

For Graduate Students

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<td>05 Creative Writing</td>
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**LIBRARY ARTS**

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<thead>
<tr>
<th>8 9 11 13 English Literature Excluding American</th>
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<tbody>
<tr>
<td>8 13 Early Modern English Language and Literature</td>
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<tr>
<td>Senior: 129-129</td>
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</tr>
<tr>
<td>8 210 Middle English Poetry and Prose</td>
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</tr>
<tr>
<td>8 210 Medieval Literature</td>
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<tr>
<td>8 217 Preservers of the Vernacular</td>
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<tr>
<td>8 179 Old Norse</td>
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**Literary Period Courses**

<table>
<thead>
<tr>
<th>8 210 Early American Literature</th>
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</thead>
<tbody>
<tr>
<td>8 220 American Literature</td>
<td>3 a.b.</td>
</tr>
<tr>
<td>8 221 19th-Century Literature</td>
<td>3 a.b.</td>
</tr>
<tr>
<td>8 222 Victorian Literature</td>
<td>3 a.b.</td>
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<tr>
<td>8 223 Modern Literature</td>
<td>3 a.b.</td>
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<tr>
<td>8 224 20th-Century American Literature</td>
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<tr>
<td>8 226 Contemporary American Literature</td>
<td>3 a.b.</td>
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<tr>
<td>8 228 20th-Century American Literature</td>
<td>3 a.b.</td>
</tr>
<tr>
<td>8 230 Modern Literature</td>
<td>3 a.b.</td>
</tr>
<tr>
<td>8 234 Augustan Studies: History and Literature</td>
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</tr>
<tr>
<td>8 235 Modern Literature and Its Backgrounds</td>
<td>3 a.b.</td>
</tr>
</tbody>
</table>

**Authors Courses**

<table>
<thead>
<tr>
<th>8 231 Chaucer</th>
<th>3 a.b.</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 232 Shakespeare: Early Plays</td>
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</tr>
<tr>
<td>Senior: 367-367</td>
<td></td>
</tr>
<tr>
<td>8 233 Shakespeare: Later Plays</td>
<td>3 a.b.</td>
</tr>
<tr>
<td>Senior: 367-367</td>
<td></td>
</tr>
<tr>
<td>8 234 Milton</td>
<td>3 a.b.</td>
</tr>
<tr>
<td>8 235 Selected Authors</td>
<td>3 a.b.</td>
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</tbody>
</table>

**Literary Criticism Courses**

<table>
<thead>
<tr>
<th>8 241 History of Criticism: Rome to 1700</th>
<th>3 a.b.</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 242 History of Criticism: 1700 to 1900</td>
<td>3 a.b.</td>
</tr>
<tr>
<td>Senior: 408-408, 367-367</td>
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</tr>
<tr>
<td>8 243 Issues in Contemporary Literary Criticism</td>
<td>3 a.b.</td>
</tr>
<tr>
<td>Senior: 437-437</td>
<td></td>
</tr>
<tr>
<td>8 244 Issues in the History of Literature</td>
<td>3 a.b.</td>
</tr>
<tr>
<td>8 245 Dramatic Theory I</td>
<td>2-3 a.b.</td>
</tr>
<tr>
<td>8 246 Critical Theories</td>
<td>2-4 a.b.</td>
</tr>
<tr>
<td>8 248 Renaissance and Modern Rhetoric</td>
<td>3 a.b.</td>
</tr>
</tbody>
</table>

| 8 299 Contemporary Rhetoric | 3 a.b. |
| Senior: 309-309 |        |
| 8 300 Introduction to Modern Literary Criticism | 3 a.b. |
| Senior: 408-408 |        |
| 8 301 Introduction to Modern Literary Criticism | 3 a.b. |
| Senior: 408-408 |        |

**Special Period Studies Courses**

<table>
<thead>
<tr>
<th>8 301 Medieval Studies</th>
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</thead>
<tbody>
<tr>
<td>8 302 Renaissance Studies</td>
<td>3 a.b.</td>
</tr>
<tr>
<td>8 303 Shakespeare</td>
<td>3 a.b.</td>
</tr>
<tr>
<td>8 304 19th-Century American Literature</td>
<td>3 a.b.</td>
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<tr>
<td>8 305 20th-Century English Literature</td>
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<tr>
<td>8 306 American Studies</td>
<td>3 a.b.</td>
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<tr>
<td>8 307 Modern Studies</td>
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<tr>
<td>8 308 Latin-American Studies</td>
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<tr>
<td>8 309 Medieval and Renaissance Literature</td>
<td>3 a.b.</td>
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<tr>
<td>8 310 Modern Literature</td>
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<tr>
<td>8 311 Gothic and Romantic Literature</td>
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<tr>
<td>8 312 Victorian and Edwardian Literature</td>
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<tr>
<td>8 313 Modern Studies</td>
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<td>8 314 Latin-American Literature</td>
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<tr>
<td>8 315 Medieval and Renaissance Literature</td>
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<tr>
<td>8 320 Medieval and Renaissance Literature</td>
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<tr>
<td>8 321 19th-Century American Literature</td>
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<tr>
<td>8 322 20th-Century American Literature</td>
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<td>8 323 American Studies</td>
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**Comparative and European Literature**

<table>
<thead>
<tr>
<th>8 322 European Renaissance</th>
<th>3 a.b.</th>
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</thead>
<tbody>
<tr>
<td>8 323 European Renaissance</td>
<td>3 a.b.</td>
</tr>
<tr>
<td>8 324 European Renaissance</td>
<td>3 a.b.</td>
</tr>
<tr>
<td>8 325 Age of Enlightenment</td>
<td>3 a.b.</td>
</tr>
<tr>
<td>8 326 Age of Enlightenment</td>
<td>3 a.b.</td>
</tr>
<tr>
<td>8 327 Modern European Poetry</td>
<td>3 a.b.</td>
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</tbody>
</table>

**Graduate Seminars**

<table>
<thead>
<tr>
<th>8 390 Interdisciplinary Backgrounds at Literary Periods</th>
<th>3 a.b.</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 391 Modernism in English and American Literature</td>
<td>3 a.b.</td>
</tr>
<tr>
<td>8 392 Literary Genre &amp; Modes</td>
<td>3 a.b.</td>
</tr>
<tr>
<td>8 393 Patterns of Myth and Literary Forms</td>
<td>3 a.b.</td>
</tr>
<tr>
<td>8 394 Types of Modern Criticism</td>
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</tr>
</tbody>
</table>

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</tr>
<tr>
<td>0-311</td>
<td>Seminar: Literature and Communication</td>
</tr>
<tr>
<td>0-310</td>
<td>Seminar: Analytical Bibliography and Theological Criticism</td>
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<tr>
<td></td>
<td><strong>Independent Study</strong></td>
</tr>
<tr>
<td>0-309</td>
<td>Advanced Studies in an Author</td>
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<tr>
<td>0-314</td>
<td>Advanced Studies in a Literary Period</td>
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<tr>
<td>0-317</td>
<td>Advanced Studies in a Literary Form</td>
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<tr>
<td>0-315</td>
<td>Advanced Studies in a Literary Genre</td>
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<td>0-316</td>
<td>Advanced Studies in a Library Movement</td>
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<tr>
<td>0-320</td>
<td>Advanced Studies in a Literary Theme</td>
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<tr>
<td>0-325</td>
<td>Advanced Studies in Literary Criticism</td>
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<tr>
<td>0-345</td>
<td>Advanced Studies in Rhetoric</td>
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<td>0-344</td>
<td>Advanced Studies in an Historical Essay</td>
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<tr>
<td>0-350</td>
<td>Special Project for Grad Students</td>
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**Linguistics and Language Courses**

<table>
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<tbody>
<tr>
<td>0-325</td>
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</tr>
<tr>
<td>0-310</td>
<td>Introduction to Linguistics</td>
<td>3 b.</td>
</tr>
<tr>
<td>0-314</td>
<td>Language Data Processing</td>
<td>3 b.</td>
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<td>0-315</td>
<td>Language Data Processing</td>
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<tr>
<td>0-316</td>
<td>Historical and Comparative Linguistics</td>
<td>3 b.</td>
</tr>
<tr>
<td>0-313</td>
<td>History of the English Language</td>
<td>3 b.</td>
</tr>
<tr>
<td>0-326</td>
<td>Elementary Old English</td>
<td>3 b.</td>
</tr>
<tr>
<td>0-310</td>
<td>The Structure of English</td>
<td>3 b.</td>
</tr>
<tr>
<td>0-314</td>
<td>Modern English Grammar</td>
<td>3 b.</td>
</tr>
<tr>
<td>0-315</td>
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</tr>
<tr>
<td>0-313</td>
<td>History of the English Language</td>
<td>3 b.</td>
</tr>
<tr>
<td>0-314</td>
<td>Elementary Old English</td>
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</tr>
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<tr>
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<td>Modern English Grammar</td>
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**Expository Writing Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td>0-315</td>
<td>English Expository Writing</td>
<td>3 b.</td>
</tr>
<tr>
<td>0-310</td>
<td>Theories of Rhetoric</td>
<td>3 b.</td>
</tr>
<tr>
<td>0-314</td>
<td>Technical and Scientific Writing</td>
<td>3 b.</td>
</tr>
<tr>
<td>0-316</td>
<td>Traditional Grammar and Logic</td>
<td>3 b.</td>
</tr>
<tr>
<td>0-320</td>
<td>Speech and Thought for Business and Public Purposes</td>
<td>3 b.</td>
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<tr>
<td>0-318</td>
<td>Advanced Expository Writing</td>
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</tr>
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<td>0-316</td>
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**Special Interest Courses**

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<th>Credit Hours</th>
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<tbody>
<tr>
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</tr>
<tr>
<td>0-311</td>
<td>Writing for the Sciences</td>
<td>3 b.</td>
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</tbody>
</table>

**General Interest Courses**

These courses are designed to serve the general interests and needs of undergraduate and graduate students in all areas of the University. They offer practice in written expression and Pound's techniques of expository writing.

<table>
<thead>
<tr>
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<tbody>
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<tr>
<td>0-320</td>
<td>Speech and Thought for Business and Public Purposes</td>
<td>3 b.</td>
</tr>
<tr>
<td>0-318</td>
<td>Advanced Expository Writing</td>
<td>3 b.</td>
</tr>
</tbody>
</table>

**Professional Workshop Courses**

These courses are designed to serve the special needs and interests of undergraduate and graduate students who have demonstrated engagement and performance in a specific area of creative writing. They offer practice in written expression and Pound's techniques of expository writing for specialized audiences and audiences.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-311</td>
<td>Writing for the Humanities</td>
<td>3 b.</td>
</tr>
<tr>
<td>0-311</td>
<td>Writing for the Sciences</td>
<td>3 b.</td>
</tr>
</tbody>
</table>
French

The undergraduate major in French may be completed with an orientation in literature, civilization or teaching. Courses taught in English do not count toward the French major.

The literature program requires a total of 35 semester hours, including:
- 9/27-28 Second-Year Composition and Conversation 8 s.h.
- 9/11-12 Third-Year Composition 8 s.h.
- 9/129 French Conversation: Third Level 2 s.h.
- 9/136 French Conversation: Fourth Level 2 s.h.
- 9/175 Advanced French Pronunciation 2 s.h.
- 9/29 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.

The civilization program requires 34-35 semester hours, including:
- 9/27-28 Second-Year Composition 8 s.h.
- 9/111 Third-Year Composition 3 s.h.
- 9/129 Daye Year Composition 3 s.h.
- 9/136 French Conversation: Fourth Level 2 s.h.
- 9/175 Advanced French Pronunciation 2 s.h.

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

The teaching major requires 35 semester hours, including:
- 9/27-9/28 Second-Year Composition and Conversation 8 s.h.
- 9/111-112 Third-Year Composition and Conversation 9 s.h.
- 9/175 Advanced French Pronunciation 2 s.h.
- 9/129 French Conversation: Third Level 2 s.h.

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.

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.
- 18/121-122 Advanced Composition and Conversation 8 s.h.
- 18/125-126 Introduction to Italian Literature 8 s.h.
- 18/191-192 Dante and His Times 8 s.h.
- 18/131 Literature of the 19th Century 3 s.h.
- 18/132 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 Quelipole is a companion of a Summer Program in France for students enrolled in the three Iowa Regents universities. Eligibility for the program requires a good basic knowledge of French (two years of college-level preparation is recommended), but does not require that the student be a French major. Certain in Rothen and Paris, the eight-week program combines formal classwork 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 two 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. For some students this may be a terminal degree, for others a step toward the doctorate. The plan of study should therefore correspond to the candidate’s objectives. Students will consult with the departmental director of graduate studies and their advisory committees in determining plan of study.

Master of Arts without Thesis

This program requires a minimum of 30 semester hours and the passing of a written and oral examination. The program must include 9/175 Advanced French Pronunciation, 9/209 Advanced Grammar and Lexicology, 9/210 Comparative Stylistics, and at least four graduate-level (200 and above) literature courses. With the permission of the departmental executive officer, the candidate may take up to six of the required 30 hours outside the Department.

Master of Arts with Thesis

The requirements for the thesis program are the same as for the M.A. without thesis, except that the thesis program the candidate may earn up to 6.5 semester hours/credit for the thesis, which will be deferred at the time of the comprehensive examination.

Master of Arts in French Education

This program is intended primarily for prospective secondary and junior college teachers. Requirements include a total of 30 semester hours at the advanced level, of which 8 must be taken in education or related fields and at least 9 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 Stylistics
9/113-114 French Civilization
9/150 Methods, Foreign Language
P151 Language Laboratory
P162 Equipment Procedures
9/162 Contemporary France
9/175 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);
Completion of three graduate courses (minimum of eight semester hours) in a related field, such as another literature, or history, philosophy, etc.; and
A minimum of six semester hours of credit in 9/277 Thesis.

The choice of second language and field are to be determined by the candidate and adviser 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

For admission to the M.A. program in French, the applicant must have completed the equivalent of the undergraduate major in French. Deficiencies in preparatory training may be removed by taking appropriate courses.

It has been the practice of the Department to require that doctoral candidates first earn the M.A. degree in French. Successful completion of the M.A. program does not necessarily qualify a student for doctoral studies. For students earning the M.A. at The University of Iowa, the M.A. comprehensive examination committee will make a recommendation concerning admission to the Ph.D. program. Students applying for doctoral candidacy with the M.A. earned at another institution are, when admitted, placed on conditional status and this status is reviewed after one semester of residence. In addition to the Graduate Record Examination scores required by the Graduate College, the Department requires of all candidates 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 name 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 students one year of residence in France.

French Courses

Primarily for Undergraduates

Students who have had significant experience with French through study or foreign travel are required to take an oral examination.
A student may not repeat, for either credit or quality points, an examination already taken if he has already completed a higher-level course by which the elementary course or its equivalent is prerequisite.

831 Elementary French 4 x 4
For students who have no knowledge of French.
832 Elementary French 4 x 4
Prerequisite: 831 or equivalent.
835 Elementary French Intensive Course 4 x 4
First-year French in one semester.
873 Freest for Travelers I 2 x 2
Basic conversational French for the traveler. Given in Saturdays and Evening Class Program.
888 Freest for Travelers II 2 x 2
Continuation of 873, with emphasis on practical vocabulary. Given in Saturdays and Evening Class Program.
893 French Civilizations in America 2 x 2
Introduction to the history and culture of the United States as reported to travelers from France, from colonial times to the present. Given in Saturday and Evening Class Program.
B10 French Literature and Civilization 4 x 4
Given every spring term only. May be taken as part of one semester required. Space is limited.
8111 Intermediate French 3 x 3
Recommended for students who wish to broaden their study of French with second-year knowledge of the language.
8122 Intermediate French 3 x 3
Continuation of 811. Prerequisite: 8111 or equivalent.
825 French Penetration 2 x 2
May be taken in conjunction with 820, 823, 9111, 9115.
Italian Courses

For Undergraduates and Graduates

18-11 Dante and His Times
Given in English

Primary for Graduates

12.204 Italian Literature and the 20th Century
Given in Italian

12.454 Intensive Italian
Given in Italian

12.209 Italian Dramatic Literature of the 20th Century
Given in Italian

12.344 Early Italian Lyric
Given in English

12.211 Dante's Divine Comedy
Given in Italian

12.225 Dante's Divine Comedy II
Given in Italian

12.273 Special Work

12.320 Intensive Backgrounds of Literary Periods

General Science

Coordinator: Ronald C. Yager
Degree offered: B.S., B.S.C.

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 experience—a combination attractive for preparation for secondary-school teaching and/or health-related professions including medicine, dentistry, medical technology, pharmacy, and similar areas, and certain specialized and interdisciplinary graduate areas. There are three categories of programs leading to the bachelor's degree in General Science, each having differing requirements, as follows:

Non-Teaching and Non-Health Related

A student must earn 41 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 (biochemistry, botany, chemistry, mathematical sciences, geology, microbiology, physics, astronomy, and zoology), with at least 20 semester hours in three of these areas.

At 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. If equivalent, or a higher level mathematics course at the college level:

12.225:1 Multivariable-Methods II
22.111:1 Functions of College Mathematics
22.118 Calculus for the Biological Sciences
22.001 Elementary Functions

Any 200-level course except 22.001.

Health Related—Joint Programs

A student must earn 44 semester hours (49 for the B.S. degree) of credit for courses from any three of the science-mathematics areas in the College of Liberal Arts (biochemistry, 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 College of Medicine prior to obtaining a bachelor's degree, and students admitted into the professional program in Medical Technology, Nuclear Medical Technology, or Physical Therapy may substitute from their first year of professional training 30 semester hours of credit toward the 124 needed for graduation; including:

Eight semester hours of science toward the 44 needed toward the general science minor;

Four semester hours of science toward the 124 needed in one area in the major.

Students should consult with appropriate sections of the catalog for further information concerning other features of these professional and preprofessional programs. The description here pertaining 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.
Teaching

A student may earn a B.A. or B.S. degree in general science by completing one of the approved sequences for 60 semester hours. Students desiring certification to teach science in secondary schools must also complete the credential requirements, which include a 24 semester hour sequence of courses in education.

All of the general science sequences must include two of the following:
97:02 Societal and Educational Applications of Earth Science Concepts and Topics 3 s.h.
97:03 Societal and Educational Applications of Biological Concepts 3 s.h.
97:05 Societal and Educational Applications of Physics Concepts 3 s.h.
97:06 Societal and Educational Applications of Chemical Concepts 3 s.h.
97:14 Principles in Integrating the Teaching of Environmental Science 3 s.h.

All sequences must include all of the following:
97:12 Meaning of Science 2 s.h.
97:13 Science in Historical Perspective 2 s.h.
41:14-16 Principles of Chemistry I-II 6 s.h.
41:16 Elementary Chemistry Laboratory I 2 s.h.

Requirements for the approved sequences in general science include the following, in addition to those listed above as common to all approved sequences:

Biology Emphasis

Advisor: John A. Farin
21:1 Introduction to Botany 4 s.h.
37:2 Principles of Animal Biology 5 s.h.
41:11 Introduction to Genetics, Ecology, and Physiology 14 s.h.
41:12 Organic Chemistry I 3 s.h.
Chemistry electives 5 s.h.
12:3 Principles of Physical Geochemistry 2 s.h.
12:4 Principles of Historical Geology 2 s.h.
29:11 College Physics 4 s.h.
97:12 Societal and Educational Applications of Biological Concepts 3 s.h.
At least 20 of the 56 semester hours in this sequence must be earned in 120-level courses.
Upon successful completion of the program, including the education sequence, the student is recommended for certification to teach general science, biology, chemistry, and physical science.

Chemistry Emphasis

Advisor: Vincent L. Lunea
41:21 Organic Chemistry I 3 s.h.
41:31 Physical Chemistry I 3 s.h.
41:41 Intermediate Chemistry Laboratory I 2 s.h.
97:108 Societal and Educational Applications of Chemical Concepts 3 s.h.
29:11-12 College Physics 8 s.h.
and 7 s.h. of physics electives
or 28:17-19 Introduction to Physics I-III 12 s.h.
and 3 s.h. of physics electives
32:05-06 Engineering Calculus I-II 8 s.h.
At least 20 of the 56 semester hours in this sequence must be earned in 120-level courses.
Students successfully completing the program, including the education sequence, are recommended for certification to teach physical science, chemistry, and physics. A student who, in addition, earns six semester hours of credit in biology is also recommended for certification to teach general science.

Earth Science Emphasis

Advisor: Edward L. Pizzuti
123 Principles of Physical Geography 3 s.h.
12:10 Physical Geography 2 s.h.
12:4 Principles of Historical Geology 2 s.h.
or 12:104 Historical Geography 2 s.h.

Environmental Studies Emphasis

Advisor: Donald Shelton
21:1 Introduction to Botany 4 s.h.
37:3 Principles of Animal Biology 5 s.h.
37:106 Genetics 3 s.h.
37:132 Ecology 4 s.h.
Electives in biology 7 s.h.
97:140 Problems in Integrating the Teaching of Environmental Science 3 s.h.
At least 16 s.h. of geology, geography, environmental engineering, and/or environmental health courses.
At least 20 of the 56 semester hours in this sequence must be earned in 120-level courses.
Students successfully completing the program, including the education sequence, are recommended for certification to teach general science and biology.

Physics Emphasis

Advisor: Vincent L. Lunea
29:11-12 College Physics 8 s.h.
and 29:17-18 Intermediate Physics I-II 4 s.h.
29:19 Introductory Physics II 1 s.h.
29:19 Introductory Physics III 4 s.h.
Physics electives 14 s.h.
32:35-36 Engineering Calculus I-II 8 s.h.
41:21 Organic Chemistry I 3 s.h.
41:31 Physical Chemistry I 3 s.h.
At least 10 of the 56 semester hours in this sequence must be earned in 100-level courses.

Students completing the program, including the dietitian sequence, are recommended for certification to teach physical science, chemistry, and physics. Those who, in addition, earn six semester hours of credit in biology are also recommended for certification to teach general science. Those who, in addition, earn 12 semester hours of credit in astronomy and geology are also recommended for certification to teach earth science.

**Minors in Science Teaching**

Six science teaching minors are available for persons with teaching majors in other academic areas. All require 21 semester hours of credit, excepting the two general science minors, which require 35.

Students who wish to pursue a science teaching minor and to qualify for University of Iowa recommendation for teaching certification should consult a faculty member in Science Education.

All science teaching minors must include:

<table>
<thead>
<tr>
<th>Minor</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>75:151 Science Methods I: Individualizing Instruction in Science</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>76:152 Science Methods II: References and Teaching Strategies</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>75:191 Observational and Laboratory Practice in the Secondary School</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>97:128 Meeting of Science</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>97:130 Science in Historical Perspective</td>
<td>2 s.h.</td>
</tr>
</tbody>
</table>

Other basic requirements:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td></td>
</tr>
<tr>
<td>2:1 Introduction to Botany</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>37:3 Principles of Animal Biology</td>
<td>5 s.h.</td>
</tr>
<tr>
<td>97:109 Societal and Educational Applications of Biological Concepts</td>
<td>arr.</td>
</tr>
<tr>
<td>Botany and zoology electives</td>
<td>9 s.h.</td>
</tr>
<tr>
<td>Chemistry</td>
<td></td>
</tr>
<tr>
<td>4:13-14 Principles of Chemistry I-II</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>4:16 Elementary Chemistry Laboratory</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>97:109 Societal and Educational Applications of Chemical Concepts</td>
<td>arr.</td>
</tr>
</tbody>
</table>

**General Science I**

- **Concepts**
  - Chemistry electives: 10 s.h.

**Physics**

- 29:111-12 College Physics 8 s.h.
- Physics electives 10 s.h.

**General Science II**

- **Environmental Studies Emphasis**
  - 2:1 Introduction to Botany 4 s.h.
  - 37:3 Principles of Animal Biology 5 s.h.
  - 87:122 Ecology 4 s.h.
  - 4:13 Principles of Chemistry I 3 s.h.
  - Electives in environmental engineering 3 s.h.

- **Earth Science**
  - 12:3 Principles of Physical Geology 2 s.h.
  - 12:4 Principles of Historical Geology 2 s.h.
  - 29:61 General Astronomy Geology and astronomy electives 10 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 advisers, 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, zoology, and general science). These special rules include:

At least ten 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 in 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 advisable. Letters approving other languages are filed with the student's records in the Registrar's Office.

No "115" numbered science core courses or credit from the CLEP National Science General Examination may be credited 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 in 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, health-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 for 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 obtain numerous appropriate advanced courses in both pure and applied mathematics (including statistics and computer science) to the extent that they may be qualified at a later date to do graduate work and quantitative research.
The Interdepartmental Ph.D. Program in Genetics

The Interdepartmental Ph.D. Program in Genetics is designed to promote collaborative investigations and strong intellectual interdependence 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 excepting PhD students in the Interdepartmental Genetics Ph.D. Program are required to take three specific courses—Genetic Biochemistry, Advanced Genetics I, and one-hour seminar course given each semester. In addition, upper-division courses are roughly divided into three areas: molecular and microbial genetics, cell and development genetics, and quantitative and population genetics; students are required to elect these seminar hours of courses in each of the three areas. Additional courses in genetics or related disciplines can be elected to provide supplementary background in 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, cutting-edge research projects. Students are encouraged to enter the laboratory of their choice and begin their own research as quickly as possible. Research interests of the program faculty range broadly from bacteriology 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, anatomy, ecology, protein biochemistry, development, 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, quantitative, and analytic aptitude tests, and letters of recommendation. Requirements for admission are not rigid. Although almost all students currently in genetics at Iowa have undergraduate grade point averages greater than 3.2 and GRE verbal plus quantitative exceeding 1550, students with lower GPAs or GRE scores may be admitted depending on other indicators of their academic potential.

Applications for admission will be accepted at any time but should be received by February 15 to insure consideration for the following academic year.

**Financial Aid**

The most highly qualified applicants will be supported as National Institutes of Health predoctoral trainees. Traineeships include a stipend of $8,900 for 12 months, complete tuition scholarships, and additional support for trainees' research. In addition, stipends will be supplemented by occasional teaching or research (Trainees are encouraged to do some teaching as part of their development as scientists and teachers.)

Students may also be supported by full-time teaching or research assistantships, with stipends of about $5,000 per year. Students receiving assistantships may also apply for full or partial tuition scholarships.

**Medical Scientist Training Program**

Students may combine studies toward an M.D. and a Ph.D. in genetics. Further information about this program can be obtained from the Science-Scientific Training Program in the College of Medicine.

**Departmental Ph.D. Programs**

The department of biochemistry, botany, microbiology and zoology offer degrees in programs in which graduate students may specialize in a particular aspect of genetics. Students are referred to environmental descriptions elsewhere in the Catalog for further information about these programs. The following genetic courses are available to graduate students in the Genetics Program:

- **99:178 Advanced Genetics (same as 2178, 81:178, 37:178)**
- **21:104 Cytogenetics**
- **21:160 Genetics and Biogenesis of Cell Organelles**
- **21:165 Genetics and Cell Biology**
- **21:171 Microbial Genetics**
- **21:175 Molecular Genetics**
- **21:177 Quantitative Genetics**
- **21:241 Biological Genetics**
- **21:259 Evolutionary Genetics**
- **21:265 Evolutionary Genetics**
- **21:270 Population Genetics**
- **21:275 Molecular Genetics**
- **21:277 Genes and the Genome**
- **21:279 Topics in Medical Genetics**
- **21:344 Topics in Evolutionary Genetics**

Students may also be supported by full-time teaching or research assistantships, with stipends of about $5,000 per year. Students receiving assistantships may also apply for full or partial tuition scholarships.
Geography

Department chair: James B. Lindberg
Faculty: Dr. A. J. Dunkle, Dr. J. F. Kuhn, Dr. R. T. Murphy, Dr. B. P. Reynolds, Dr. S. Scott, Dr. R. W. Stokely, Dr. J. G. Stokely, associate professor William Grif, Prof. D. H. Huns, Prof. R. K. Vlahos, Prof. J. M. Koester, Russell Lee

Degrees offered: B.S., B.S. M.A., M.S.

Modern geography is concerned mainly with the spatial aspects of human and physical geography and with massenvironmental 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 ghettoes 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 such spatial 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 types of analytical 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 social 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 human recreation of, and subsequent interactions with, the total environment. Courses in geography are commonly required of students preparing to enter the teaching profession at the elementary and secondary school levels, of students who want to work in urban and regional planning, and as a background for many related professions, including law, 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.S. degree; and (2) for those interested in acquiring a major in geography. The Department also has in significant interdepartmental programs involving regional, urban, and environmental components.

Courses for the Nonmajor

Students in the College of Liberal Arts or other schools and colleges of the University who do not plan to major in geography may find meaningful such courses as: 44:116 Urban Political Geography, 44:128 American Wilderness: Environment and Issues, 44:136 The Inner City, 44:139 Urban Problems, 44:162 The Third World, 44:165 The Changing World and 44:191 Energy in Contemporary Society.

Students in several related disciplines and in the Bachelor of General Studies program take clusters of courses in geography according to their individual interests. Those specializing in environmental studies might elect such upper-level courses as 44:101 Introduction to Weather and Climate, 44:119 Natural Environments -Intro., 44:120 Natural Resources, 44:121 Stream Processes and Water Resources, 44:122 Natural Resources of the United States, 44:123 Geography of Natural Resources, 44:123 Environmental Impact Studies and 44:180 Field Techniques in Natural Environmental Problems.

For students interested in a cluster of advanced courses in urban studies, the Department offers 44:111 Introduction to Urban Transportation, 44:116 Urban Political Geography, 44:135 Urban Geography, 44:136 The Inner City, 44:137 Metropolitan Growth and Development and 44:138 Urban Problems.

Students in business may benefit from taking such a technical analysis course as 44:30 Introduction to Economic Geography, 44:130 Location of Services and 44:132 Industrial Location.

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. 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 four areas: environmental studies, urban and regional studies, locational analysis, and international development studies. Students may choose to develop expertise in one of these areas, or they may choose to develop an individualized program within the curriculum offered by the Department. Students planning 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 20 semester hours of geography coursework, at least 15 of which must be at the 100-level. All majors will find that they will need more than the minimum requirements for mastery of a specific subfield.

All majors must complete the courses 225-127 Applied Statistical Methods and Computation, or its equivalent as approved by the department chair and on recommendation of the student's advisor; and 44:150 Undergraduate Seminar for Geography Majors. Other than these two courses, the requirements vary with the specific program selected by the student.

Bachelor of Science students must complete either 225-127 Introduction to Computing with MATLAB or 44:116 introduction to Programming with P/J with consent of advisor, or 225-25 Calculus I.
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 those 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 courses include 22S:127 Applied Statistical Methods and Computations, 44:160 Undergraduate Seminar for Geography Majors, 44:180 Field Techniques in Natural Environmental Problems and 22C:7 Introduction to Computing with FORTRAN or 22C:15 Introduction to Programming with PL/I with consent of advisor, or 22M:25 Calculus I.

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

44:1 Introduction to Human Geography
44:2 Natural Environment and Men
44:101 Introduction to Weather and Climate
44:119 Natural Environmental Issues
44:120 Natural Hazards
44:151 Stream Processes and Water Resources
44:122 Natural Resources of the United States
44:103 Geography of Natural Resources
44:125 Environmental Impact Studies

Also recommended are 44:102 Maps and Mapping and 44:108 Computer Methods in Geographical Analysis.

Under the direction of an adviser, students should select courses in related disciplines from among the following:

12:5 Introduction to Geology
12:5 Evolution of the Earth
12:110 Geologic Remote Sensing
12:108 Introduction to Oceanography

12:110 Geologic Remote Sensing
12:112 Geologic Field Methods
12:171 Geomorphology
34:170 Population and Society
34:175 Introduction to Demography
62:133 Economic Growth and Environmental Decay
37:126 A Planet in Crisis
527:101 Technology of Environmental Pollution Control

Urban and Regional Studies
Students with interests in urban and regional analysis will find this concentration rewarding, either as background/training for prelaw work or as preparation for entry-level positions in government and private businesses. This concentration focuses on the problems and potentials of towns, cities, and regions, and the decision-making processes of individuals and institutions. Dealing with such problems as assessing site development potential, locating public facilities and gauging neighborhood change brings the student inside the dynamic of contemporary cities. Requisite skills in quantitative analysis, cartography, and computer usage are developed. Opportunities for experience in working with real problems are included.

Required courses are:

22S:131 Statistical Methods with Applications
44:138 Spatial Organization
44:150 Undergraduate Seminar for Geography Majors
22C:7 Introduction to Computing with FORTRAN or
22C:16 Introduction to Programming with PL/I with consent of advisor
or
22M:25 Calculus I

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

44:1 Introduction to Human Geography
44:2 Natural Environment and Men
44:119 Natural Environmental Issues
44:120 Natural Hazards
44:151 Stream Processes and Water Resources
44:122 Natural Resources of the United States
44:103 Geography of Natural Resources
44:125 Environmental Impact Studies

Issues and Problems
34:35 Introduction to Urban Geography
44:114 Introduction to Urban Transportation
44:118 Urban Political Geography
44:130 Location of Services
44:132 Industrial Location
44:135 Urban Geography
44:138 The Inner City
44:137 Metropolitan Growth and Development
44:199 Urban Problems

Also recommended:

44:107 Maps and Mapping
44:109 Computer Methods in Geographical Analysis

Under the direction of an adviser, students should select courses in related disciplines from among the following:

113:1 Urban Anthropology
16:187 The City in America: History, Politics, and Policy
30:111 Municipal Government and Politics
34:172 Urban Dynamics of Urban Life
102:102 Case Studies: Urban and Regional Planning
102:108 Housing Analysis
62:135 Regional and Urban Economics
62:137 Problems in Urban Economics

Locational Analysis
The concentration in locational analysis is designed for students who wish to gain expertise in the more traditional problem-solving aspects of 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:

22S:127 Applied Statistical Methods and Computations
44:138 Spatial Organization
44:150 Undergraduate Seminar for Geography Majors
44:108 Computer Methods in Geographical Analysis

22C:15 Introduction to Computing with FORTRAN
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 government, teaching, or some form of applied geography; and to help students develop their skills to apply knowledge of facts, theories and methodology to specific sociopolitical problems. The achievement of these goals is demonstrated in large measure by the demand for Iowa graduates to fill positions on college and university faculties, in research-oriented institutions and in business and government.

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

The Department offers specialized instruction in the teaching of geography at the college level (44:208 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 44:208 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 areas of interest: students who wish to prepare for positions in research or teaching; the other for students who are interested in 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, of which 15 semester hours must be 200-level courses or above, including a minimum of two units of 44:201-202 Geographical Analysis I-II and 44:208 Quantitative Analysis I. The remainder of
their programs must be composed of
graduate-level courses or research seminars as approved by the faculty or 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, of which 15 semester hours must be 200-level courses or above, including a minimum of two units of 44.201-202 Geographical Analysis I-II, 44.204 Quantitative Analysis I, and 44.300 Seminar in Applied Problems. A computer language course, a cartography course in its equivalent and 44.208 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 possible 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 additional time. All students must pass a final oral and/or 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. Sample programs have been formulated and may be used as guidelines. Students should inquire about the interdepartmental program.

Doctor of Philosophy
Students whose objective is the Doctor of Philosophy degree are required to complete eight hours of 44.201-202 Geographical Analysis I-II and 44.204-208 Quantitative Analysis I. The eight-week course, completing 44.201-202 should be taken within the first two years in residence and must include mini-course offerings by at least six different faculty. The courses 44.204-208 should be taken during the first year of 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.

All doctoral students must also complete two research seminars, preferably during their second year in residence, under the direction of different faculty members. Unless excused by the faculty, they are also required to register for 44.350 Research Seminar. Staff each semester while in residence. One semester hour of credit will be awarded each semester on satisfactory/unsatisfactory 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 areas of interest: courses in disciplines closely related to the student's objectives and interests, and courses which satisfy the core requirements. 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 an original 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 year in residence. The faculty will add to the merits of the research to a demonstrated. Students become Ph.D. candidates when their qualifying paper has been accepted. Research tool requirements for Ph.D. candidates are the course 44.209 Quantitative Analysis I and another appropriate course, as approved by the faculty at the time the student declares his or her specific area of specialization.

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 experience as teaching assistants, instructors and research assistants before being awarded the Ph.D. degree.

Graduate Admission
In addition to the general rules and regulations set forth in the Manual of Rules and Regulations of the Graduate College, the Department follows the guidelines for undergraduate grade-point average, especially during his or her junior and senior years; grades 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 2.5 will be admitted only for the M.A. degree and 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 under-graduate institutions which evaluate students on a basis other than grade-point average will be considered according to their relative academic standing in their respective institutions.

Financial Assistance
A number of graduate appointments as teaching or research assistants are available. Awards are based on need and, to be appointed to a teaching or research assistantship, a student must have achieved a combined score of 1100 on the GRE Verbal and Quantitative examinations and have a 3.0 undergraduate or graduate grade-point average. Applications 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 Gratton pen digitizer supported by the ILIAC-POS-4 mini-computer with a CRT for on-line editing of digitizing work and a hard copy. The University has an IBM 380 Model 86 computer, a Cyber 71 computer, and a CAACOMP plotter available to the Department. In addition, an HP 2000F system with high-resolution line is available for instructional use. The Map Library contains more than 75,000 maps, a total of 2000 atlases and reference works, etc.
most hiring agencies as the working degree in geology. However, an undergraduate degree is fully satisfactory in certain teaching, federal, and industrial situations. Many of Iowa's geology graduates find employment with the petroleum industry in exploration geology and geophysics. Others continue in graduate school or take jobs with government or conservation agencies. Some intend to enter law, business, or other fields such as urban planning, environmental studies, engineering, archaeology, science education, or oceanography as advanced areas. Geology is suited to all these.

The program at low stress the basic aspects of geology more than the engineering or agricultural phases of the discipline. The Department specializes in relating scientific thought to the study of the earth. Its resources include a major petrology faculty (invertebrates, vertebrates, paleontology), a terrestrial link to the University Computer Center, the State Geological Survey within the Geology building, and research equipment for fields such as mineralogy, petrology (igneous, sedimentary, and metamorphic), remote sensing, and evaporation geoscience.

Geology majors receive at least an academic year's work in allied scientific areas—physics, chemistry, biology, and mathematics—in addition to a course in each major area of geology.

Each year more than 1,000 students enroll in Earth Science 1123 Earth History and Resources and 1124 Men and the Physical Environment, a team-taught, laboratory lecture course designed to fulfill the College of Liberal Arts and Sciences 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 the plates (the plates, a planet in crisis, minerals and world affairs, geomorphology, oceanography, and use of native materials.

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

12.5 Introduction to Geology 4 s.h.
   (11.23 and 11.24 may substitute for 12.5)
12.6 Evolution of the Earth 4 s.h.
12.41 Mineralogy 4 s.h.
12.32 Elementary Petrology 4 s.h.
12.13 Summer Field Course 6 s.h.
12.121 Principles of Paleontology 3 s.h.
12.191 Structural Geology I 4 s.h.
12.192 Structural Geology II 3 s.h.
Two elective geology courses 6 s.h.
Total 38 s.h.

Supporting Sciences

The geology major requires at least 10 semester hours of college mathematics, including a minimum of one semester of 2234/25 Calculus I or 2234/25 Engineering Calculus I. Computer science or statistics courses may be counted toward the 10-hour requirement. Additional math (2244/45 Calculus II; 2254/55 Calculus III; or 2264/65 Engineering Calculus II-IV) is strongly recommended.

Eight hours of physics; eight hours of chemistry; and one-semester lab course of college zoology or botany also are required.

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 coursework 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:

Geology Courses

12.5 Introduction to Geology 4 s.h.
   (11.23 and 11.24 may substitute for 12.5)
12.6 Evolution of the Earth 4 s.h.
12.41 Mineralogy 4 s.h.
12.121 Principles of Paleontology 3 s.h.
12.118 Field Trip (two sections) 4 s.h.
Geology electives 16 s.h.
Total 35 s.h.

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.

Joint Programs

Joint programs can be arranged, typically with chemistry, physics, zoology, and anthropology.

Original Research

A junior or senior who is ready to pursue original research for credit may enroll in 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 thesis has been 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. 12.107
Geologic Orientation 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.

Entering graduate students are assigned to a general graduate advisor. Below the end of the second semester, the student should have selected a research area and related thesis topic. The chair then approves a thesis advisor and two additional faculty members, who form the student's advisory committee. The student is responsible for getting the committee's approval of a suitable program of coursework, and for satisfactory development of research plans as outlined in a thesis proposal which is submitted for committee approval.

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 Ph.D.

To qualify for the final oral examination, the candidate must have at least a 2.75 (A=4) 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. Research topics might include fieldwork or mapping, laboratory experiments, analytical work, or some combination.

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 geological activity.

If possible, 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 geological principles involved and its value and broader applications and implications. No college credit is granted for this activity.

The M.S. degree without thesis requires at least 39 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 activity.

The final examination covers coursework and work done in favor 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 24 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; earth and computer science are suitable tool areas. In exceptional circumstances the faculty may approve other languages or tool courses.

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 crosslisted between Geology and other departments are not generally considered to meet this requirement.

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

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

- Economic Geology
- Petrology
- Economic Deposits
- Mineral Economics
- Petrology-Mineralogy
- Mineralogy
- Igneous and Metamorphic Petrology
- Economic Geology
- Structural Geology
- Geotechnics
- Structural Analysis
Field Trips
Field trips are integral parts of several courses in geology. Weekend general-interest events are frequent. Iowa City is situated in the midst of the lofty flyschoides Palaeozoic bedrock. Marine and terrestrial fossil assemblages, extensive reeds, and unique geode sites are available within a few hours’ drive. All four Paleocenon glaciations are represented in Iowa and each offers distinctive fluvial forms and fossil assem- blages.
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 Island Region of Texas and the Ozarks. Advanced seniors and graduate students visit Colorado, Ontario, Kansas, Oklahoma and California.

Courses
Primarily for Undergraduates
12.1 Lectures in Earth History and Resources 3 s.h.
Not open to students who have had 112.1 or 112.2. See 112.2 for description.
12.2 Lectures in the Physical Environment 2 s.h.
Not open to students who have had 112.2 or 121.2 or 122.2 and 121.2 examine ancient and modern environments on and with Earth and processes by which they formed and evolved. students to physicalｈ．ｄｙｅｖｅｌｏｐｅｄ-ｅｖｏｌｕｔｉｏｎ-ｏｆ-ｏｒｇａｎｉｓｍｓ-aｎｄ-ｍａｎ’s-current-use-and-miskeenvironment.
12.3 Principles of Physical Geology 2 s.h.
Introductory course covering processes that have operated on Earth. Focuses on human impact on environment.
12.4 Principles of Historical Geology 2 s.h.
Introductions to the principles and problems which enable geologists to organize the history of the Earth. Emphasis on the earth’s age and the processes of physical geology.
12.5 Lab for Historical Geology 1 s.h.
Laboratory work related to the principles and problems presented in the historical geology course.
12.6 Evolution of the Earth 4 s.h.
Lectures, laboratories, discussion and field trips, teaching the observed and interpreted features of the earth in historical perspective. Topics include: origin of the earth; history and evolution of the earth’s structure; dating of geological events; nature of the fossil record; and meteorites. Prerequisites: 112.2 or 112.1 or 121.2 or 122.2; prior registration in 12.6.

For Undergraduates and Graduates
121.3 Physical Geology 3 s.h.
Introductory course concerning processes which have governed and are currently affecting our physical environment. Emphasis on human impact on environment.
121.4 Environmental Geology 3 s.h.
Study of rock weathering, mineralogy, and mineral distribution in the landscape. Lecture and laboratory course.
121.5 Geology of Iowa 3 s.h.
Survey of descriptive, chemical, physical, and economic aspects of the Iowa geology. Field course emphasis on the geology of eastern Iowa and the general principles of geology.
121.6 Geology of Iowa 3 s.h.
Survey of descriptive, chemical, physical, and economic aspects of the Iowa geology. Field course emphasis on the geology of eastern Iowa and the general principles of geology.

complete a minimum of 24 semester hours of coursework in the Department beyond the basic Program. The following course equivalencies are required of majors who have had no previous experience with the German language:

Basic Program

First and Second Year
1311 First Semester German 3-4 s.h.
1312 Second Semester German 3-4 s.h.
1321 Third Semester German 3 s.h.
1322 Fourth Semester German: Reading 2 s.h.
1323 Fourth Semester German: Elementary Composition and Conversation 3 s.h.
(13.22 and 13.23 may be taken concurrently, if desired, or in either order.)

Third Year
1331 Introduction to Modern German Literature I 3 s.h.
1332 Introduction to Modern German Literature II 3 s.h.
1333 Intermediate Composition and Conversation 3 s.h.
1334 Intermediate Composition and Conversation 3 s.h.
(13.31 and 13.32 must be taken in sequence; 13.33 and 13.34 may be taken in either order and concurrently with 13.31 and 13.32.)

Fourth Year
13101 Advanced Composition and Conversation 3 s.h.
13105 German Cultural History 3 s.h.
13111 Survey of German Literature 3 s.h.
13112 Survey of German Literature 3 s.h.
(13.111 and 13.112 may be taken in either order)
All courses, with the exceptions noted above, 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 13103 German Philology (three semester hours) to the above.

German majors, graduate as well as undergraduates, are urged to supplement their degree programs with relevant courses in German history, philosophy, etc.

A student with native proficiency in German may declare German only as a second major and 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 require-


ments for teacher certification are not in the change and could conflict at times with the sequential requirements of the major in German, it is imperative that the student consult with the Department of Education or undergraduate advisor to help ensure the successful completion of the certification program.

The Teaching Minor

In addition to the basic program of the first and second year, these courses or their equivalents constitute a teaching minor in German:
1331 Introduction to Modern German Literature I 3 s.h.
1332 Introduction to Modern German Literature II 3 s.h.
1333 Intermediate Composition and Conversation 3 s.h.
1334 Intermediate Composition and Conversation 3 s.h.
13101 Advanced Composition and Conversation

Honors in German

German majors of junior or senior standing with a grade-point average of at least 3.0 overall and 3.5 in German may enroll in this program. During the junior and senior years the Honor student in German is expected to engage in extra reading, 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 examination terminate 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 University Library facilitates research in all major areas of German literature and Germanic linguistics at all levels of study.

The Foreign Language House is available to undergraduate and graduate students as an on-campus housing option.

Foreign Study

The Department of German participates in the Regents' Summer Program in Austria. Sponsored by the three Iowa Regents universities, this program is open to students of all disciplines and is designed to provide a sound linguistic, cultural and academic experience to all participants.
A three-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 four-week session is held in Vienna, where faculty of the International University at the University of Vienna conduct morning classes daily, again on several levels. An optional cultural tour of Germany concludes the program.
To participate, the student must be admitted to one of the three Iowa Regents universities for the summer session. Applicants should have a good basic knowledge of German—ordinarily two years of college-level German or the equivalent. Students with less than two years may be accepted with the approval of the campus coordinator.
Graduate students are eligible to apply. All students are expected to speak only German while participating in the program.
Tuition grants are available for qualified applicants.
For further information, write to the Department of German.

Financial Aid

Teaching assistantships and tuition scholar-


ships are available for qualified graduate students. The Department awards the Wilson and the Funkle prizes to students of distinction.
Graduate Study Requirements

Master of Arts Degree with Thesis

Unsatisfactory students of German who do not maintain interest in and potential for productive scholarship and who plan to continue to the doctorate should vacate the program with a thesis. The thesis program requires a minimum of 30 semester hours, or equivalent, of graduate-level work and fulfillment of other requirements of the Department of German and the Graduate College (see "Graduate College"). If the student has not completed major courses, or equivalents, in the Department's under-graduate program, he or she will include them along with the courses required for the Master of Arts. Under some circumstances, the candidate may qualify for graduate credit for such work.

In consultation with the graduate adviser, the student should select courses which represent a balanced approach to the field. Some courses may be required of all graduate students. With the graduate adviser's approval, some of the 30 semester hours required for the degree may be taken outside the Department, in such related subjects as philosophy, history, linguistics, or other languages.

Normally two semester hours of credit may be required for satisfactory completion of the thesis. The thesis may be either literary or linguistic, or it is subject to the approval of the faculty. A student planning to continue to the Ph.D. degree is expected to write a thesis. Before the M.A. exam can be administered—usually after acceptance of the M.A. thesis—the candidate must show a competence level in a foreign language other than German equivalent to two years of college study or one year 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 teaching, government service, translation, etc., may elect the one without thesis. This program requires a minimum of 35 semester hours of coursework and leads to a terminal degree. 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, select those courses which will best prepare them for their chosen career.

Doctor of Philosophy Degree

The Ph.D. degree is awarded upon the satisfactory completion of a minimum of 72 semester hours of graduate credit and fulfillment of certain other requirements of the Department of German and the Graduate College (see "Graduate College"), with a concentration in either Germanic linguistics or German literature. Credit received toward the M.A. degree is normally 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 elect to take 12 additional semester hours of credit for satisfactory completion of the Ph.D. dissertation. 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 to licensed graduate students to gain valuable teaching experience under supervision by making teaching assistant-ship positions available.

A candidate concentrating in literature must demonstrate a reading knowledge of French and of another language which fits on her or her adviser certifies is pertinent to the student's research interests. For doctoral candidates in Germanic linguistics, a reading knowledge of French or Russian and of a modern Scandinavian language or Dutch is required. Competence in three languages may be demonstrated by two years of college study or four years of high school study, a grade of "B" or higher, or through testing. The requirements must be met before the comprehensive exams can be administered.

Courses

Courses in Translation

The courses offered by the Department, the following are in translation 131; 133; 134, 134A; 135, 136; 138, and 139, The list, semester hours of credit, and descriptions of these courses may be found in the complete course offerings which follow.

Primarily for Undergraduates

1311 German and German for Teachers 2 s.h.
1311 First Semester German 3 s.h.
1331 First Semester German 3 s.h.
1332 Second Semester German 3 s.h.
1333 Intermediate German 3 s.h.
1334 Intermediate German 3 s.h.
1335 Intermediate German 3 s.h.
1336 Intermediate German 3 s.h.
1337 Intermediate German 3 s.h.
1338 Intermediate German 3 s.h.
1339 Intermediate German 3 s.h.
1341 German and German for Teachers 2 s.h.
1342 German and German for Teachers 2 s.h.
For Undergraduates and Graduates

Language Courses for Graduation in Other Fields of Study

Graduate Courses

13.205 Advanced Studies

13.225 Seminar Prereq.

13.250 Advanced Studies

13.255 Seminar Prereq.

13.261 Seminar in Advanced Studies

13.271 Seminar in Advanced Studies
The Undergraduate Program

Because our graduates in history go into a variety of petitions 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 which 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. In, e.g., for example, strongly recommended that the College of Liberal Arts degree requirement in a foreign language be met by selecting a language which fits in with the major student's history interests.

General Major in History

The general major is for students with a general interest in history. The program requirements are:

A minimum of 24 semester hours in courses offered by the Department of History, of which at least 12 semester hours must be in non-U.S. This limitation is imposed to assure acquiescence with the history of at least one other society besides our own.

Three semester hours in 1851 Colloquium for History Majors. A colloquium consists of a small number of students collectively studying problems in ways which give training and experience in group discussion, analysis and criticism. It is best taken after the student has finished a number of other history courses.

Of the 24 semester hours of history, nine (including the three hours of colloquium) must be taken in residence at The University of Iowa.

A minimum of 16 to 18 semester hours in related courses in anthropology, economics, fine arts (exclusive of studio courses), geography, literature (excluding workshop courses), philosophy, political science, psychology, religion, and sociology; or a second major in one of these areas. Core courses and course taken to satisfy core requirements will not be counted toward the related-areas requirement.

It is recommended but not required that the student pursing the general major meet the College of Liberal Arts historical-cultural core requirements with 11-29-3O Problems in Human History, 11-31-32 Western Civilization, or 11-55-58 Civilizations of Asia.

Prospective Teachers In History

Students majoring in history who wish to qualify for a teaching certificate must satisfy the historical-cultural core requirement by taking two of the following courses:

11-29-30 Problems in Human History, 11-31-32 Western Civilization, 11-55-58 Civilizations of Asia (a total of 6 a.h.); and complete the professional courses in the College of Education which are required for teacher certification (a total of 23 a.h.).

They must take an area of concentration in history and meet these requirements:

American History Concentration

Courses in U.S. history 20 a.h.
Courses in related areas 36-44 a.h.

Students must pick three of the following six related areas: economics, geography, world history (non-U.S.), political science, psychology, sociology. They must take 12 semester hours of courses in each of the three areas they choose, except psychology, in which they must take 20 semester hours.

Courses in these subjects which have been taken to satisfy the social science core requirement may be applied to the required hours in related areas, but no more than one such course may be applied to any one related area.

World History Concentration

Courses in non-U.S. History 20 a.h.
Courses in related areas 36-44 a.h.

Students must pick three of the following six related areas: economics, geography, American History, political science, psychology, sociology. They must take 12 semester hours of courses in each of the three areas they choose. Each psychology, in which they must take 20 semester hours. Courses in these subjects which have been taken to satisfy the social science core requirement may be applied to the required hours in related areas, but no more than one such course may be applied to any one related area.

Students seeking the teaching major in history should consult an adviser in Social Studies Education (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 theses 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 of oral defenses of an Honors thesis.
Graduate Study
The graduate programs in History prepare students to teach in high schools or colleges, and for such public positions as government, business, and other 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").
Qualifed graduate students are invited to apply for fellowships and assistantships. Inquiries should be addressed 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 preparation of a research essay. The candidate must earn at least 24 semester hours of credit in History. Twelve, including at least one seminar, must be in the area of the student's essay topic, and at least six must be in a second division, including either a seminar or a 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. Work on the essay will normally begin in the seminar in the major division and be continued with individual study: Graduate, in which rewriting will be completed under the guidance of the supervisor. In exceptional cases where the essay is completed in seminar it 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 Ph.D. 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 divisions in History, or six hours in one other division in History and six hours in a related department. These hours must include at least one reading or seminar course in History.
After completing these requirements, or in the semester in which 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 essays 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 maximum 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 headship. At least 18 of these 24 hours must be completed before taking the comprehensive examinations, and at least 18 of these 24 hours must be completed at The University of Iowa. The candidate must pass two written examinations. At least one of these must be in philosophy of history, historiography, or methods of historical research.
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 three comprehensive written and oral examinations will cover four distinct fields, at least three of them in History. The fields in History must be chosen from at least two of these divisions:
The Ancient World
Medieval Europe
Europe, 1000 to 1815
Europe, 1815 to Present
Russian 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 may determine from time to time. 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 first or the M.A. program, must meet the general requirements for admission to the Graduate College. In addition, they must submit a specimen of their writing—such as a term paper, seminar paper, or M.A. thesis—to the History Department. All applications for graduate awards are due February 15 for the succeeding year. Applications for admission are due April 15 and November 10 for the following summer. 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.
home economics education, appliance and clothing, home economics contributes to the physical, psychological, social, and aesthetic development of people.

Home economics as a career offers a wide range of opportunities: teaching, statistics, merchandising, interior and textile design, product development and quality control in textile and food industries, consumer relations, family life education and services, food service management, and service with community or government agencies.

**Undergraduate Requirements**

The undergraduate program prepares students for immediate employment as professional home economists, and also for advanced study.

Concentration in design and housing, family development, food and nutrition, home economics education, or textiles and clothing makes it possible for undergraduate majors to develop specialization. The home economics core provides a central body of knowledge and a realistic understanding of relationships among the various areas of specialization within home economics. Joint programs may be arranged with other fields such as journalism, art, social work and education.

In meeting the general requirements for the B.A. or B.S. degree of the College of Liberal Arts, students majoring in home economics need to select courses in other departments for the necessary prerequisites for home economics courses.

All students majoring in home economics complete the core:

- 119 Human Development and the Family 3 a.h.
- 1741 Food, Nutrition and Man 3 a.h.
- 1750 Diet for the Home 3 a.h.
- 1760 Textiles for Consumers 1 a.h.
- 1711 Management of Family Resources 3 a.h.
- 17100 Seminar: Home Economics 2 a.h.

**The Bachelor of Arts**

**Design and Housing**

Students concentrating in design and housing are prepared for careers in residential and commuter interior design, space planning, design consulting, merchandising, fashion design, and window design and display. The requirements for this concentration:

1753 Presentation Graphics 3 a.h.
1754 Interior Design: Principles and Practices I 3 a.h.
17130 Survey of Historic Interiors 4 a.h.
17160 Textile Design: Printing and Dyeing 3 a.h.
17165 Housing: Planning and Structural Aspects 3 a.h.
1197 Form and Theory in the Visual Arts 4 a.h.
1138 M1 in the Western World 4 a.h.
1B1 Elements of Art 2-3 a.h.
1B2 Elements of Art 2-3 a.h.
1B2 Elements of Art 2-3 a.h.
1A4 Basic Design An approved three-dimensional studio art course 2 a.h.
1A4 Basic Design An approved two-dimensional studio art course 2 a.h.

Two of the following, one of which must be a studio course:

17155 Interior Design: Principles and Practices II 3 a.h.
17154 Interior Design: Principles and Practices III 3 a.h.
17156 Survey of Modern Interiors 2 a.h.
17157 Historic Restoration Methodology 3 a.h.
17162 Textile Design: Basic Weaving 3 a.h.
17163 Textile Design: Intermediate Weaving 3 a.h.
17164 Textile Design: Form and Fibers 3 a.h.
17166 Housing: Social and Psychological Aspects 3 a.h.

One of the following:

1B31 Introduction to Marketing 2 a.h.
861 Principles of Marketing 4 a.h.
862 Principles of Economics 4 a.h.

Electives from home economics, business administration, urban and regional planning, art history, studio art, social sciences, and computer science are required.

**Family Development**

This program prepares students for careers with agencies and service concerned with the total family and its functioning, for family life education, and for the extension service. Required:

17110 Growth and Development of the Young Child 3 a.h.
17113 Marriage and Family Interaction 3 a.h.
17114 Parent-Child Relationships 3 a.h.
17115 Parent-Child Relationships in the Exceptional Family 3 a.h.
17116 Divorced Studies in Family Development 3 a.h.
17117 Materials and Methods in Family Life Education 3 a.h.
911 Elementary Psychology 4 a.h.
341 Introduction to Sociology: Principles 4 a.h.
1One of the following:
34158 The Family in Various Societies 3 a.h.
34161 The Americas Family 3 a.h.
34162 Countries, Marriages and Alternative Life Styles 3 a.h.

Electives from home economics, education, social work, anthropology, and sociology are recommended.

**Food and Nutrition**

This program prepares students for careers in dietetics, in the food industry, and for service with community and government agencies. A concentration in food and nutrition requires:

17131 Food Study 2 a.h.
17132 Food Study Laboratory 2 a.h.
17133 Meal Management 2 a.h.
17134 Experimental Food I 3 a.h.
17135 Experimental Food II 3 a.h.
17146 Nutrition Laboratory 2 a.h.
17142 Nutrition 3 a.h.
4115 Nutrition Chemistry I 3 a.h.
4116 Elementary Chemistry Laboratory I 2 a.h.
4121 Organic Chemistry I 3 a.h.
4141 Intermediate Chemistry Laboratory I 2 a.h.
8515 General Microbiology 4 a.h.
7213 Introduction to Human Physiology 4 a.h.
99120 The Chemistry of Biological Materials 3 a.h.
99130 Metabolism 3 a.h.

Electives should be selected from home economics and the natural sciences.

A concentration in nutrition with an emphasis on biometrics requires:

17131 Food Study 2 a.h.
17132 Food Study Laboratory 2 a.h.
<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:123</td>
<td>Meal Management</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>17:124</td>
<td>Experimental Food I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>17:126-127</td>
<td>Institution Management I-II</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>17:142</td>
<td>Nutrition</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>17:146</td>
<td>Robiniv Laboratory</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>17:147</td>
<td>Diet Theory</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>4:13-14</td>
<td>Principles of Chemistry I-II</td>
<td>5  s.h.</td>
</tr>
<tr>
<td>4:16</td>
<td>Elementary Chemistry Laboratory I</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>4:191</td>
<td>Organic Chemistry I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>96:190</td>
<td>The Chemistry of Biological Materials</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>96:190</td>
<td>Metabolism</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>65:115</td>
<td>Principles of Economics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>65:159</td>
<td>Personnel Management</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>7:75</td>
<td>Educational Psychology and Measurement</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>7:75</td>
<td>126 Educational Psychology</td>
<td>3-4 s.h.</td>
</tr>
<tr>
<td>34:1</td>
<td>Introduction to Sociology: Principles</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>31:1</td>
<td>Elementary Psychology</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>61:157</td>
<td>General Microbiology</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>72:13</td>
<td>Introduction to Human Physiology</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>1153</td>
<td>Introduction to the Study of Culture and Society</td>
<td>4 s.h.</td>
</tr>
</tbody>
</table>

Electives should be selected according to the student's professional objective from the natural sciences, business administration, psychology, computer science, wildlife, education, and home economics.

This program fulfills the minimum academic requirements of the American Dietetic Association Plan IV. All students applying for internships and travel scholarships must have completed at least the first semester of the senior year.

Home Economics Education

This program leads to certification and vocational preparation in home economics. Graduates are qualified to teach home economics in secondary schools, to work in home economics extension and other agencies, and to teach in nurischool settings. Required:

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:31</td>
<td>Introductory Food Study</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>17:31-122</td>
<td>Food Study, Food Study Laboratory</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>17:122</td>
<td>Personal Financial Management</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

17:113 Marriage and Family Interaction 3 s.h.
17:114 Parent-Child Relationships 3 s.h.
17:211 Curriculum: Home Economics 3 s.h.
17:228 Evaluation: Home Economics 2 s.h.
17:130 Meal Management 2 s.h.
17:165 Housing: Planning and Structural Aspects 3 s.h.
17:166 Housing: Social and Psychological Aspects 3 s.h.
17:77 Apparel, Fashion and Selection 3 s.h.
17:170 Custom and Contemporary Tailoring 3 s.h.
17:171 Fitting Problems and Flat Pattern Design 3 s.h.
18:1 Elements of Art 2-3 s.h.
18:2 Elements of Art 2-3 s.h.
46:1 Principles of Economics 4 s.h.
46:2 Principles of Economics 4 s.h.
31:1 Elementary Psychology 4 s.h.
34:1 Introduction to Sociology: Principles 4 s.h.

In addition, students must complete the coursework generally required for teacher certification. The methodology course required in home economics education is "Designing the Curriculum: Home Economics" (3 s.h.).

In addition to the general requirements to be eligible for student teaching (75:191 or 75:192), the student in home economics education must have completed 28 semester hours of home economics courses with a 2.5 grade-point average in that work, and must have received no grade less than "C" in the home economics courses required for home economics endorsement and occupational approval.

For the general requirements to be eligible for student teaching and for certification, the "College of Education" and "Secondary Education." Students beginning their programs in 1978 and afterwards will be required to have 400 hours of paid employment in a home economics-related occupation (e.g., food service, day care center, retailing) for certification. This work experience can be

through 17:000 Cooperative Education Training Assignment or through Verification of Work Experience. 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 Apparel Fashion and Selection 3 s.h.
17:81 Science of Textiles 3 s.h.
17:170 Custom and Contemporary Tailoring 3 s.h.
17:171 Fitting Problems and Flat Pattern Design 3 s.h.
17:172 Fashion Merchandising 3 s.h.
17:174 Textile Finishing, Dyeing, and Dewatering 3 s.h.
17:183 Tailing and Apparel Economics 3 s.h.
4:15-16 General Chemistry I-II 6 s.h.
4:15-16 General Chemistry Laboratory I 2 s.h.
56:1 Principles of Economics 4 s.h.
65:1 Introduction to Marketing 3 s.h.
66:1 Administrative Management 3 s.h.
68:13 Consumer Behavior 3 s.h.
68:137 Advertising Theory and Planning 3 s.h.
11:57 Form and Taeby in the Visual Arts 4 s.h.
A course in computer science is a core requirement for communications.

Courses in business administration, computer science, journalism, communication, and home economics are recommended as electives.

Concentration in textiles technology requires:
17:70 Introductory Clothing Construction 3 s.h.
17:72 Apparel Fashion and Selection 3 s.h.
17:81 Science of Textiles 3 s.h.
The Bachelor of Science

The B.S. programs are recommended for students who want greater depth or breadth in the natural sciences, and for those interested in seek positions in colleges, secondary schools, business, industry, and government.

Food and Nutrition

In addition to the requirements for the B.A. degree emphasizing food or nutrition, the B.S. degree requires the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>22M:0:3 Mathematical Techniques I</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>22M:20 Elementary Functions</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>22M:0:6 Calculus I</td>
<td>4 a.h.</td>
</tr>
<tr>
<td>29:11:12 College Physics</td>
<td>5 a.h.</td>
</tr>
<tr>
<td>&lt;130 Physical Chemistry for the Life Sciences</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>99:140 Experimental Biochemistry</td>
<td>4 a.h.</td>
</tr>
</tbody>
</table>

Home Economics Education

Graduates can enter the careers described for the B.A. degree. The B.S. program enables students to acquire greater depth and breadth in the technical and social sciences. In addition to the courses and work experience listed for the B.A. degree, the B.S. requires:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/7:3 General Chemistry I-L</td>
<td>8 a.h.</td>
</tr>
<tr>
<td>4/9:3 General Chemistry Laboratory</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>A course in statistics</td>
<td>3 a.h.</td>
</tr>
</tbody>
</table>

Two courses from the following sciences major courses numbered 500 or above in anthropology, economics, psychology, or sociology

Textile Science

This program prepares students for positions in the textile industry, and for graduate studies. In addition to courses listed for the B.A. degree, the following courses are recommended:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/101 Elementary Quantitative Analysis</td>
<td>4 a.h.</td>
</tr>
<tr>
<td>4/121-122 Organic Chemistry II</td>
<td>8 a.h.</td>
</tr>
<tr>
<td>5/28 Calculus II</td>
<td>4 a.h.</td>
</tr>
<tr>
<td>22M:06 Calculus II</td>
<td>4 a.h.</td>
</tr>
<tr>
<td>or 22M:3 Mathematical Techniques II</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>or 22M:20 Elementary Functions</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>or 29:26 Co-ordination Laboratory for</td>
<td></td>
</tr>
<tr>
<td>Calculus and Linear Algebra</td>
<td></td>
</tr>
</tbody>
</table>

Electives should be selected from chemistry, engineering, computer science, statistics, microbiology, and home economics.

Cooperative Education Internship Program

The Department participates in the University’s Cooperative Education Program, which enables students to obtain work experience related to their professional goals and academic program. Students who are concentrating in design and housing, home economics eduction, or textiles and clothing, and who meet the Department’s requirements, may apply to the Department of Cooperative Education Committee for participation in the program.

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 3.5 or higher in home economics courses, and at least 16 semester hours completed in home economics. Honors work consists of 17:191 Honors Seminar, Home Economics, and 17:282 Honors Problems in Home Economics. In order to be admitted to the Honors 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 graduates enjoy quality 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 areas: design and housing, family development, food and nutrition, home economics education, and textiles and clothing.

The Department offers both full- and non-full-time programs. The part-time program is recommended for students preparing for teaching and research in colleges and universities, for positions in industry, and for continued study beyond the bachelor’s degree. The master’s program permits more intensive experience in research procedures or the opportunity for extensive creative work. The thesis is required for students in the full-time program, or in combination with related departments or colleges. To be admitted unconditionally, the student must have an overall grade-point average of 3.8 with 1.0 in the area in which he or she is to be the major interest in graduate study.

Master's Programs

For either the Master of Arts or Master of Science degree, students must complete a minimum of 30 semester hours of graduate work with a thesis, or 38 semester hours of graduate work without a thesis, in addition to adequate prerequisites for courses selected. Approximately one-third of the student’s coursework is completed in departments other than Home Economics. The designation of the degree, M.A. or M.S., depends on the area of major work.

At least 15 of the 30 graduate hours must be completed in the University. For the thesis degree, 12 hours are required to be completed in the thesis course 17:281 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 are available to the M.A. graduate 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.
17:290 Seminar: Design and Housing 2 s.h.
17:290 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:
17:157 Interior Design: Principles and Practices I 3 s.h.
17:154 Interior Design: Principles and Practices II 3 s.h.
17:155 Survey of Historic 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.
17:166 Studio Workshop: Fiber 4 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:

17:198 Sexuality and the Family 3 s.h.
17:215 Seminar: Family Dynamics 3 s.h.
17:213 Thaycey in Family Development 3 s.h.
17:218 Research Problems in Family Studies 3 s.h.

17:290 Seminar: Home Economics Research 2 s.h.
17:290 Child Development 3 s.h.
A course in statistics 3 s.h.

Food and Nutrition

Graduate work may emphasize foods, nutrition, or nutrition education. Graduates qualify for positions in educational institutions, businesses, industry, government, and the health field. Applicants need background courses in foods, nutrition, general and organic chemistry, mathematics, physiology, and microbiology.

For specialization in food (M.S.):
17:134-136 Experimental Food I-II 6 s.h.
17:290 Seminar: Food 2 s.h.
17:209 Research: Problems in Food and Nutrition 2-4 s.h.
17:241 Seminar: Nutrition 2 s.h.
17:290 Seminar: Home Economics Research 2 s.h.
99:220 The Chemistry of Biological Materials 3 s.h.
99:130 Metabolism 3 s.h.
31:157 General Microbiology 4 s.h.

For specialization in nutrition (M.S.):
17:134 Experimental Food I 3 s.h.
17:145 Advanced Nutrition 3 s.h.
17:146 Nutrition Laboratory 2 s.h.
17:290 Seminar: Food 2 s.h.
17:290 Research: Problems in Food and Nutrition 2-4 s.h.
17:241 Seminar: Nutrition 2 s.h.
17:290 Seminar: Home Economics Research 2 s.h.
99:130 The Chemistry of Biological Materials 3 s.h.
99:130 Metabolism 3 s.h.
225:103 Biostatistics 3 s.h.
7P:143 Introduction to Statistical Methods 3 s.h.

Textiles and Clothing

This program prepares students for careers in merchandising, textile research, teaching, and service and communication. Required:

17:279 Research: Problems in Clothing 2 s.h.
17:289 Research: Problems in Textiles 2 s.h.
17:290 Seminar: Home Economics Research 2 s.h.
7P:143 Introduction to Statistical Methods 3 s.h.

Additional courses in textiles and clothing are required based upon the student's educational background and professional needs.

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 confined and requires written and oral comprehensive examinations.
Grades obtain a home economics teacher's certificate with vocational approval. Applicants must have a bachelor's degree in home economics and a 2.7 minimum grade-point average, and must be admitted to the M.A.T. program in the college of Education.

The program requires 150 semester hours of graduate coursework in education and at least 18 semester hours of graduate work in home economics. For certification, the student must complete (at the graduate and/or master's levels) a course in American politics or American government and two courses in such of the following areas: design and housing, family development, food and nutrition, family economics and home management, and textiles and clothing. Required are:

- 17:121 Curriculum: Home Economics 3 s.h.
- 17:155 Evaluation: Home Economics 2 s.h.
- 7P:131 Educational Psychology 3 s.h.
- 7S:125 Methodology: Home Economics 3 s.h.
- 17:191 Observation and Laboratory Practice in the Secondary School 12 s.h.

A course in the philosophy of history or education 2 s.h.

Certificate-Only Program

Students with the B.S. or B.A. degree in home economics may participate 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 academic and performance. The Finn-Nor Receiving Award is given to the student with the excellence of writing work completed in home economics courses. The Sohosmore Rock Award recognizes the most home economics major with the highest grade-point average. The Margaret Foster Heaf Award is a full-tuition scholarship given to a student for her/his senior year. The Myra Lee Sprengler 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 beginning graduate student studying home economics. The other scholarship is provided by the Iowa Home Economics Association. A limited number of stipends are available to graduate students.

Courses

Primary for Undergraduates

- 17:00 Cooperative Education-Tripling Assignment 5 s.h.
- 17:00 Human Development and the Family 3 s.h.
- 17:10 Social and Development of the Young Child 3 s.h.
- 17:12 Social and Development of Young Children, 3 s.h.
- 17:03 Introductory Food Science 3 s.h.
- 17:04 Food, Nutrition and Health 3 s.h.
- 17:13 Social and Development of the Family 3 s.h.
- 17:14 Social and Development of Young Children, 3 s.h.
- 17:16 Social and Development of the Young Child 3 s.h.
- 17:17 Social and Development of the Young Child 3 s.h.
- 17:18 Social and Development of the Young Child 3 s.h.
- 17:19 Social and Development of the Young Child 3 s.h.
- 17:20 Social and Development of the Young Child 3 s.h.
- 17:21 Social and Development of the Young Child 3 s.h.
- 17:22 Social and Development of the Young Child 3 s.h.
- 17:23 Social and Development of the Young Child 3 s.h.
- 17:24 Social and Development of the Young Child 3 s.h.
- 17:25 Social and Development of the Young Child 3 s.h.
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- 17:53 Social and Development of the Young Child 3 s.h.
- 17:54 Social and Development of the Young Child 3 s.h.
- 17:55 Social and Development of the Young Child 3 s.h.
- 17:56 Social and Development of the Young Child 3 s.h.

For Undergraduates and Graduates

- 17:56 Ethics Aspects of Aging 2 s.h.
- 17:15 Ethics Aspects of Aging 2 s.h.
- 17:16 Ethics Aspects of Aging 2 s.h.
- 17:17 Ethics Aspects of Aging 2 s.h.
- 17:18 Ethics Aspects of Aging 2 s.h.
- 17:19 Ethics Aspects of Aging 2 s.h.
- 17:20 Ethics Aspects of Aging 2 s.h.
- 17:21 Ethics Aspects of Aging 2 s.h.
- 17:22 Ethics Aspects of Aging 2 s.h.
- 17:23 Ethics Aspects of Aging 2 s.h.
- 17:24 Ethics Aspects of Aging 2 s.h.
- 17:25 Ethics Aspects of Aging 2 s.h.
- 17:26 Ethics Aspects of Aging 2 s.h.
- 17:27 Ethics Aspects of Aging 2 s.h.
- 17:28 Ethics Aspects of Aging 2 s.h.
group in the population and on prevention, assessment and management of health-related educational and rehabilitation needs, with children's development, and the impact of the family on the health of the child. Course requires one 45-hour seminar. 42.320, 42.330.

13.119 Research: Problems in Faculty Studies 2 s.h.
An alphabetical speaking out on the work of faculty and the problems they face. Prerequisite: 11.2 s.h. and consent of instructor. 72.320, 72.325.

13.221 Research: Problems in Education 2 s.h.
Current research problems in education. Prerequisite: 13.221. 12.320, 12.325.

13.222 Research: Problems in Educational Administration 2 s.h.
Current research problems in educational administration. Prerequisite: 13.221. 12.320, 12.325.

13.223 Research: Problems in Economics 1 s.h.
Current research problems in economics. Prerequisite: 13.221. 12.320, 12.325.

13.224 Research: Problems in Sociology 1 s.h.
Current research problems in sociology. Prerequisite: 13.221. 12.320, 12.325.

13.225 Research: Problems in Business Administration 2 s.h.
Current research problems in business administration. Prerequisite: 13.221. 12.320, 12.325.

13.226 Research: Problems in Psychology 1 s.h.
Current research problems in psychology. Prerequisite: 13.221. 12.320, 12.325.

13.227 Research: Problems in Social Work 1 s.h.
Current research problems in social work. Prerequisite: 13.221. 12.320, 12.325.

13.228 Research: Problems in Psychology 1 s.h.
Current research problems in psychology. Prerequisite: 13.221. 12.320, 12.325.

13.229 Research: Problems in Anthropology 1 s.h.
Current research problems in anthropology. Prerequisite: 13.221. 12.320, 12.325.

13.230 Research: Problems in History 1 s.h.
Current research problems in history. Prerequisite: 13.221. 12.320, 12.325.

13.231 Research: Problems in English Literature 1 s.h.
Current research problems in English literature. Prerequisite: 13.221. 12.320, 12.325.

13.232 Research: Problems in Mathematics 1 s.h.
Current research problems in mathematics. Prerequisite: 13.221. 12.320, 12.325.

13.233 Research: Problems in Philosophy 1 s.h.
Current research problems in philosophy. Prerequisite: 13.221. 12.320, 12.325.

13.234 Research: Problems in Psychology 1 s.h.
Current research problems in psychology. Prerequisite: 13.221. 12.320, 12.325.

13.235 Research: Problems in Psychology 1 s.h.
Current research problems in psychology. Prerequisite: 13.221. 12.320, 12.325.

13.236 Research: Problems in Psychology 1 s.h.
Current research problems in psychology. Prerequisite: 13.221. 12.320, 12.325.

13.237 Research: Problems in Psychology 1 s.h.
Current research problems in psychology. Prerequisite: 13.221. 12.320, 12.325.

13.238 Research: Problems in Psychology 1 s.h.
Current research problems in psychology. Prerequisite: 13.221. 12.320, 12.325.

13.239 Research: Problems in Psychology 1 s.h.
Current research problems in psychology. Prerequisite: 13.221. 12.320, 12.325.

13.240 Research: Problems in Psychology 1 s.h.
Current research problems in psychology. Prerequisite: 13.221. 12.320, 12.325.

13.241 Research: Problems in Psychology 1 s.h.
Current research problems in psychology. Prerequisite: 13.221. 12.320, 12.325.

13.242 Research: Problems in Psychology 1 s.h.
Current research problems in psychology. Prerequisite: 13.221. 12.320, 12.325.

13.243 Research: Problems in Psychology 1 s.h.
Current research problems in psychology. Prerequisite: 13.221. 12.320, 12.325.

13.244 Research: Problems in Psychology 1 s.h.
Current research problems in psychology. Prerequisite: 13.221. 12.320, 12.325.

13.245 Research: Problems in Psychology 1 s.h.
Current research problems in psychology. Prerequisite: 13.221. 12.320, 12.325.

13.246 Research: Problems in Psychology 1 s.h.
Current research problems in psychology. Prerequisite: 13.221. 12.320, 12.325.

13.247 Research: Problems in Psychology 1 s.h.
Current research problems in psychology. Prerequisite: 13.221. 12.320, 12.325.

13.248 Research: Problems in Psychology 1 s.h.
Current research problems in psychology. Prerequisite: 13.221. 12.320, 12.325.

13.249 Research: Problems in Psychology 1 s.h.
Current research problems in psychology. Prerequisite: 13.221. 12.320, 12.325.

13.250 Research: Problems in Psychology 1 s.h.
Current research problems in psychology. Prerequisite: 13.221. 12.320, 12.325.

13.251 Research: Problems in Psychology 1 s.h.
Current research problems in psychology. Prerequisite: 13.221. 12.320, 12.325.
student must design a plan of study and present it for adviser approval.

**News-Editorial Sequence**

This sequence is concerned with the gathering, organizing, and effective writing of news and other information from printed, human- and environmental sources, and with the producing, packaging, and display of news stories, articles, and illustrations, for printed and broadcast media. This sequence 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:

19:112 News Reporting and Writing 4 s.h.
19:114 News Writing 4 s.h.
19:116 Advanced Reporting 2 s.h.

Maximum journalism credit allowed toward graduation: 36 s.h.

**Mass Communication Sequence**

This is an alternative to the News-Editorial Sequence, offering several other approaches to obtaining a major in the School of Journalism.

One approach is laboratory oriented. Stressing applied theory and practice, this track offers students a variety of opportunities to develop and refine their skills in such media as writing, graphic design, and photojournalism, and to develop oral and written communication skills. Career possibilities include broadcasting, video, public relations and organizational communication as well as others.

Another approach in this sequence is primarily theoretical. It emphasizes the acquisition of knowledge about communication in lecture and seminar settings in which the basic perspective is humanistic and philosophical. This track concentrates on the study of communication as a way of understanding society and human interaction with the focus on historical, philosophical, and socio-scientific models of understanding. Students in this track often pursue graduate studies in other or related areas.

It is possible to combine both approaches into one program.

Special requirements for the two tracks of the Mass Communication Sequence are:

**Laboratory Track**

19:181 Mass Communication Lab for at least 15 semester hours in applied journalism courses in such areas as writing, public relations, video, photography, typography, etc. Program must be approved in advance by adviser.

**Theoretical Track**

19:182 Special Topics in Communication and at least 17 semester hours of other journalism courses, including nine in advanced journalism conceptual courses. Maximum journalism credit allowed toward graduation: 36 s.h.

**Graduate Programs**

**Master of Arts**

The Master of Arts degree program in journalism combines professional practical in the media with consideration of the effects, relationships 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, either a professional journalism or a communication 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 non-professional experience and an undergraduate degree in a field other than journalism, the M.A. in Professional Journalism requires:

19:112 News Reporting and Writing 4 s.h. (does not count toward the required 30 s.h.)
19:200 Master's Seminar 3 s.h.
(Section 1 to be taken during the 1st semester)
19:242 News Communication I: Principles and Practice 4 s.h.
19:241 News Communication II 3 s.h.
19:251 Master's Research 3 s.h.

**Doctorate in Mass Communication**

The doctoral program in mass communication is an interdisciplinary program whose central objective is to develop scholars who will make significant contributions to teaching and research in communication. The background is provided by a number of fields, including university teaching, news communication, international communication, and others requiring ability to design effective communication strategies. The program is designed around a core of graduate work in communication, and encourages the student to work with his or her advisor 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—psychoanalytical, systems design, historical, legal, behavioral, literary. Center services include consultation, training, publication in appropriate outlets, excellence in obtaining financial support for projects and assistance in finding support and data analysis. The Center publishes the semi-annual Journal of Communication Inquiry, which is student-edited and available to explore different approaches in communication theory and research.
Iowa Lakes Laboratory

Director: Richard V. Busenberg

The Iowa Lakes Laboratory is a biological field station comprising approximately 100 acres of grassland and gallery forest along the west shore of Lake Okoboji in northwest Iowa. The laboratory was established in 1909 under the leadership of Theodore H. Macduff, whose eminence as a University of Iowa geologist was well established. In 1879-1881, he was recognized in his elevation to the University presidency in 1879-1881. The lab was the first public sewage facility for the conservation and study of the rich flora and fauna of the northern Iowa lakes and prairies.

Since 1947, the University of Iowa has cooperated with Iowa State University and the University of Northern Iowa in the Iowa Lakes Laboratory program. Representatives of the two schools make up the advisory board which determines the scientific and educational policies of the Lab.

Teaching Program
The Iowa Lakes Laboratory offers courses in two five-week terms during the summer session.
Enrollment is limited to one course, for five weeks of credit, per term.
The Laboratory gives special students—advanced undergraduates and graduate—the opportunity to meet the demands of plant and animal life in a natural setting. Study therefore supplements, and does not replace, regular college work given formally by accredited colleges.

Students working for advanced degrees will find ample opportunities for development of thesis projects. Teaching and research facilities include seven laboratories and a lecture hall. Living accommodations include cottages, dormitories, and a large mess hall.

Financial Aid
The University of Iowa has established several Thomas H. Macduff Scholarships in Natural Science for undergraduate and graduate students attending the Iowa Lakes Laboratory. The Scholarships cover tuition. Applications close April 1.

Registration
Current or former students of the three cooperating universities should ask their respective offices for particulars. Students from other institutions must apply for admittance to one of the three cooperating universities; each has a provisional admission office for students who wish to register for summer work only.
Early registration is advisable. All applications should be completed before May 1.

Courses
The courses vary from year to year. For specific information, all students are advised to consult the directory for that year's seminar. The following is a general schedule:

- Introduction to ecology and wildlife history, involving field observation of ecosystems, including discussions of communities, man-made, non-paleo- and natural habitats of the region. The students will have some background in biology, who will find this required.

- Aquatic Ecology

- Local aquatic plants and animals, analysis of aquatic ecosystems, assessment of ecological principles. Field work and research; mapped with theory. The lecture is not a technical seminar. For students with broad biological background, including some ecology, chemistry, physics.

- Soil Ecology

- Individual project work.

- Forest Ecology

- Basic principles of classification and ecology of natural forests. Taxonomic basis, techniques, and the nature of forest will be explored. Field collections and plot techniques will be presented.

- Geology


- Geology

- Study of the processes, with emphasis upon the morphology, physiology, metamorphosis, and ecology of living and dead terrestrial forms. Collection, culture, and classification of soil samples; experimental work to be included.

- Freshwater Algae

- Region is one of the world's finest algal meadows. Collection and analysis of algal life forms. Chain colonizing studies. Immediate laboratory support and creative work associated with student observations of algal biology. Special emphasis will be placed on the taxonomic and ecological relationships of algae with demonstrated and theoretical applications in biological and related sciences.

- Plant Ecology

- Emphasis on local (Iowa) terrestrial and aquatic forms, the environment, their response, behavior, methods of collecting, culturing, and identifying, with an emphasis on study of living algae. Emphasis upon a unique environment with background in invertebrate zoology.

- Research

- Research

- Independent Study

- Independent Study

- Field Ecology

- Identification and classification of the common ferns. The laboratory is unique in being a field research station for the study of ferns and their ecology. Emphasis on growth and development, techniques in collection and preservation of fern specimens.

- Field Ecology

- Field Ecology

- Field Ecology
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 nondegree graduate program for certification in school librarianship.

Its graduate 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 limited 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)
21:151 Reference
21:132 Cataloging and Classification
21:153 Selection of Library Materials
Type-of-library course (one required)
21:231 The Public Library
21:232 The College and University Library
21:233 School Media Center Administration
Bibliography course (one required)
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, when a student has had extensive undergraduate coursework in library science, when career objectives so 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 nonthesis 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

A major concern 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
Bibliography course
21:251 The Public Library
Suggested electives
21:213 Library Services to Adults
21:222 Multi-Media Concepts in Libraries
21:246 Introduction to Information Science
21:249 Research Methods
21:251 Advanced Reference
21:252 Advanced Cataloging
21:263 Problem in Library Management
21:282 Practicum in Libraries
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 the teaching program, producing new materials, offering reading guidance and providing reference service.

State certification is required for a career as a librarian in elementary and secondary schools.

Required courses
Core courses
Bibliography course
21:222 Multi-Media Concepts in Libraries
Suggested electives
21:233 School Media Center Administration
21:234 Library Services to Children and Young Adults
21:246 Research Methods
21:251 Advanced Reference
21:263 Problem in Libraries
75:281 Junior High School and
75:291 Secondary School Curriculum
Additional courses in educational media

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
21:232 The College and University Library
Suggested electives
21246 Introduction to Information Science
21247 Research Methods
21251 Advanced Reference
21252 Advanced Cataloging
21255 Government Publications
21263 Problems in Library Management
21264 Medical Librarianship and Bibliography
21265 Law Librarianship, Bibliography and Research Techniques
21266 Practicum in Libraries
Additional bibliography courses

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
Core courses
Bibliography course
Type-of-library course
21230 Social Libraries
Suggested electives
21246 Introduction to Information Science
21247 Research Methods
21251 Advanced Reference
21252 Advanced Cataloging
21255 Government Publications
21263 Problems in Library Management
21264 Medical Librarianship and Bibliography
21265 Law Librarianship, Bibliography and Research Techniques
21266 Practicum in Libraries

Certification in School Librarianship
Students who desire to become school librarians may fulfill certification requirements within the M.A. program, or they may pursue a non-degree certification program. The certification program, a 20-semester-hour sequence, accepts both undergraduate and graduate course work, and does not require a foreign language for admission.

The required courses and suggested electives are the same as those listed above under School Library Work, except that a bibliography course is not required. The student must hold an approved teaching certificate, either at the elementary or the secondary level. Completion of the certification program provides authorization to serve as librarian K-12.

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 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 electives toward the M.B.A. A minimum of 80 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. A media lab provides equipment and space for slide-tape production, videocassette programming, super-8 filmmaking, filmstrip production, desktop publishing, 16mm film previewing, and simple video editing.
Computer facilities include an on-line lab with 30 IBM terminals and one printer terminal, providing access to the University’s CYBER system, national bibliographic data bases, and DIALOG (a national on-line library network). A teletype links the School with a state network of academic and public libraries, by which students provide back-up reference service to libraries throughout the state.
A departmental library contains approximately 10,000 volumes and 200 periodicals.

All of the resources of the University Libraries are available to students and faculty of the School. The system contains more than two million volumes in the Main Library and 12 depository branches.
In addition, students have access to a variety of libraries for clinical and laboratory purposes: the State Historical Society Library in Iowa City; the Iowa City and Cedar Rapids public and school libraries; the Civic, Cornell and Grinnell college libraries; and, by arrangement, the Herbert Hoover Presidential Library in West Branch, Iowa.

Placement
Prospective students are advised that since the job market for entry-level librarians has diminished graduates with strong personal and academic qualifications, flexibility, and geographic mobility will be most successful in finding positions. The School provides placement assistance to its graduates seeking employment.

Financial Assistance
The School of Library Science annually awards several partial-fellowship 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
Scholastic requirements for admission to the M.A. program include:

Placement
Linguistics

Department chair: Robert S. Wanka
Degrees offered: B.A., M.A., Ph.D.

Linguistics has evolved from a humanistic discipline into one of the social-behavioral sciences, science which objectively study the organizing principles underlying human activities.

There are many indications that such organizing principles exist in language. Children normally learn to use their native language before they ever 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 ambiguities. All languages change through time. Damage to a particular part of the brain may result in a particular type of linguistic problem, whatever the language. All languages have 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 pencil 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 socioeconomic 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 Chicanos, blacks and native Americans. They may help intelligence and achievement- test-raters avoid discrimination 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 a medium of informational, emotional, and aesthetic communication, yet can be analyzed scientifically, a major in linguistics embodies the virtues of 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 formulas 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 comparison fields include foreign languages, English, anthropology, sociology, speech pathology, psychology, mathematics, computer science, philosophy, and elementary and secondary education.

The Bachelor of Arts degree in linguistics prepares the student to do dialect analysis or syntax semantics (sentence word patterns and their relation to meaning) and phonology (sound patterns). Elective courses in a variety of sub-specialties enable each student to tailor the program to his or her own interests.

The major in linguistics requires 24 semester hours of work in the department. This includes a general introduction, and courses in syntax, phonetics, phonology, methods of analysis and language history.

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 applied 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 coursework. Students choosing to take a degree without thesis must do a focus area (consisting of 12 hours of coursework and a comprehensive examination) and take at least three semester hours of elective coursework. 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 20 hours of coursework and write a thesis or to take 36 hours of coursework. All students must have a minimum of 30 hours of graduate credit to receive the degree, regardless of prior preparation.

The Ph.D. Program

The aims of the Ph.D. program are to develop highly competent graduates in theoretical linguistics and to provide graduates with necessary theoretical tools for understanding and exploring the close relationship between linguistics and related disciplines.

The core requirement for the program includes two upper-level syntax courses (e.g., Syntactic Theory and either Advanced Syntactic Theory or Advanced Syntactic Analysis) and two upper-level phonology courses (e.g., Phonological Theory and Advanced Phonological Theory), and at least two seminars, for a total of 18 semester hours. An approved 16-hour specialty area is also required, and students must achieve proficiency in two test areas, at least one of which is a foreign language. Comprehensive examinations cover phonological theory, syntactic theory, theory of language change (historical linguistics and acoustically driven), and a specialty area.

An oral defense of the dissertation and three years of residence are also required. In addition, all candidates are required to gain supervised experience in teaching and research.
Literature, Science, and the Arts

Program chair: Donald G. Marshall
Faculty professors: Lise Cohn (Political Science), John E. Harloe (Business Administration), Richard G. Harey (Music), James C. Oates (Chemical and Materials Engineering), Robert Sekora (Religious, John A. van Hout and Martha Heinen (Sociology), assistant professors Michael J. Rowsey (Music), William R. Duffy (Education), William R. Hirst (Physics and Astronomy), David G. Woodhouse (English), George Milestone (Philosophy), assistant professors Dean Yee (Philosophy), Judith P. Allan (Drama)
Degree offered: B.A.

Courses in the Interdisciplinary Program in Literature, Science, and the Arts (LSA) should consult with the chair before the end of the sophomore year.

Honor
Superior students who undertake a further program of independent study may earn the Bachelor of Arts degree "with honors." To be admitted as a candidate for Honors, the student must have the endorsement of the chair of the Interdisciplinary Program in Literature, Science, and the Arts.

Courses
33.171 The Pursuit of Happiness 2.4 a.h.
33.172 The Pursuit of Happiness: In Science and Literature 2.4 a.h.
33.173 The Pursuit of Happiness: In Science and Literature 2.4 a.h.
33.174 The Pursuit of Happiness: In Science and Literature 2.4 a.h.
33.175 The Pursuit of Happiness: In Science and Literature 2.4 a.h.
33.176 The Pursuit of Happiness: In Science and Literature 2.4 a.h.
33.177 The Pursuit of Happiness: In Science and Literature 2.4 a.h.
33.178 The Pursuit of Happiness: In Science and Literature 2.4 a.h.
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33.180 The Pursuit of Happiness: In Science and Literature 2.4 a.h.
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33.200 The Pursuit of Happiness: In Science and Literature 2.4 a.h.
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33.202 The Pursuit of Happiness: In Science and Literature 2.4 a.h.
33.203 The Pursuit of Happiness: In Science and Literature 2.4 a.h.
33.204 The Pursuit of Happiness: In Science and Literature 2.4 a.h.
33.205 The Pursuit of Happiness: In Science and Literature 2.4 a.h.
33.206 The Pursuit of Happiness: In Science and Literature 2.4 a.h.
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33.254 The Pursuit of Happiness: In Science and Literature 2.4 a.h.
33.255 The Pursuit of Happiness: In Science and Literature 2.4 a.h.
33.256 The Pursuit of Happiness: In Science and Literature 2.4 a.h.
Students who complete the requirements for a secondary teaching certificate may take any two 100-level courses among the seven core courses in mathematics.

**The Bachelor of Science Degree**

In addition to the requirements outlined above for the Bachelor of Arts degree, the Bachelor of Science degree requires two one-semester courses from the Division, each carrying at least 2 s.h. of credit.

**Transfer Students**

Transfer students must earn at least 9 s.h. of credit in the Division beyond the first year of calculus or beyond the first course in computer science (22C.18).

**Applied Mathematical Sciences Option**

The applied mathematical sciences option is designed to reflect the increasing diversification of applications of mathematics and statistics to the social sciences, biological and physical sciences, management, business, ecology, linguistics, and engineering. For this option, the seven courses taken in addition to the first year of calculus must include:

- One semester of linear algebra (either 22M.37 Introduction to Linear Algebra or 22M.38 Differential Equations and Linear Algebra).
- At least three courses from the Division numbered 22M.50 or above (excluding 22M.50-51 = 22S.50/51 or above), at least one of which must be at or above the 100-level; and
- At least three additional quantitative courses from any one department outside of the Division. At the discretion of the adviser, courses from two closely related departments might be used.

Students electing this interdisciplinary option will be appointed to a specially designated program advisor with whom they can work out an acceptable program. Such a program must include some concentration in a particular area. Some experience with the use of the computer is also required.

**Suggested Programs**

Some typical programs in various areas are listed below. They need not be followed exactly; rather, it is expected that each student will meet with his or her adviser and work out a program which reflects his or her individual interests. The requirements are flexible enough to allow for changes in students' interests.

A student who is majoring in mathematics and who is interested in earning a Master of Business Administration (M.B.A.) with only one year of graduate study should take appropriate business courses as an undergraduate. To do this successfully, the student should consult with the associate dean of the College of Business Administration, as well as his or her adviser, before the senior year.

**General Program**

Unless a student has a strong interest in a special area in mathematics, a rather general program is suggested. This type of program should include 22C.7 Introduction to Computing with FORTRAN, preferably along with calculus during the freshman year. The program should also include a course such as 22M.50 Elements of Discrete Theory, 22M.66 Fundamentals of Structures and Functions, or 22M.103 Foundations of Mathematical Logic, in addition to at least one semester's work in statistics and probability. Additional work, in particular the required 100-level course, should be taken in whatever area of mathematical sciences is of most interest to the student. Students contemplating employment in government or industry upon completion of the B.A. or B.B. degree should consider 22C.17 Programming with PL/I and courses in numerical analysis, actuarial science, 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 examinations carried on by the principal actuarial organizations. Following is a sequence in calculus and linear algebra (22M.23-26 Calculus I-III, 22M.29 Calculus III, and 22M.37 Introduction to Linear Algebra or 22M.33-34 Engineering Calculus I-II and 22M.38 Differential Equations I)

Students who complete the requirements for a secondary teaching certificate may take two of the seven core courses in mathematics.

**The Bachelor of Science Degree**

In addition to the requirements outlined above for the Bachelor of Arts degree, the Bachelor of Science degree requires two one-semester courses from the Division, each carrying at least 2 s.h. of credit.

**Transfer Students**

Transfer students must earn at least 9 s.h. of credit in the Division beyond the first year of calculus or beyond the first course in computer science (22C.18).

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The applied mathematical sciences option is designed to reflect the increasing diversification of applications of mathematics and statistics to the social sciences, biological and physical sciences, management, business, ecology, linguistics, and engineering. For this option, the seven courses taken in addition to the first year of calculus must include:

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Linear Algebra), the student should take 225;138 Introduction to Probability, 225;154 Introduction to Mathematical Statistics I, 225;180;185 Actuarial Theory I-B and 225;177 Numerical Linear Algebra for Actuaries. Additional courses of direct professional interest to actuaries include 225;115 Actuarial & Risk Theory and 225;185 Theory of Pension Funding.

Students are encouraged to take at least one course in computer science and a substantial program of courses from the College of Business Administration. Should it not be possible to complete such a program as an undergraduate, a year of graduate work may be advisable.

Applied Mathematics
All students interested in applied mathematics should take the sequence 225;25-26 Calculus I-II, 225;28 Calculus III, and 225;27 Introduction to Linear Algebra. Additional courses in these areas of mathematics may be useful for some students.

Mathematics Education
For general requirements for teachers education, see "College of Education."

Mathematics courses required for students in mathematics education are 224;04-25 Calculus I-II, 225;27 Introduction to Linear Algebra, 225;30 Elements of Group Theory, 225;70 Euclidean Plane Geometry, and 225;56 Fundamental Properties of Spaces and Functions (to be taken before 75;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. The student might select from these 100-level courses: 225;120;121 Abstract Algebra I-II, 225;115-116 Introduction to Analysis I-II, 225;103-104 Functions of Mathematical I, 225;110 Elementary Topology I, 225;120 Probability and Statistics, 225;154 Introduction to Probability, and 225;154 Introduction to Mathematical Statistics I.

Pure Mathematics
Students interested in this area of mathematics should take two of the following courses: 225;120;121 Abstract Algebra I-II, 225;115-116 Introduction to Analysis I-II, 225;220-221 Elementary Theory of Numbers and 225;150 Matrix Theory.

Students in applied mathematics should be familiar with computer programming. 225;177 Introduction to Computing with FORTRAN can be taken early along with calculus and with the basic ideas of probability and statistics (the courses 225;138 Introduction to Probability and 225;154 Introduction to Mathematical Statistics I will be sufficient)

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 significant way, outside the Division of Mathematical Sciences. Students who plan to do graduate work in applied mathematics should take 225;115 Introduction to Analysis I.

Mathematics Education
For general requirements for teachers education, see "College of Education."

Mathematics courses required for students in mathematics education are 224;04-25 Calculus I-II, 225;27 Introduction to Linear Algebra, 225;30 Elements of Group Theory, 225;70 Euclidean Plane Geometry, and 225;56 Fundamental Properties of Spaces and Functions (to be taken before 75;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. The student might select from these 100-level courses: 225;120;121 Abstract Algebra I-II, 225;115-116 Introduction to Analysis I-II, 225;103-104 Functions of Mathematical I, 225;110 Elementary Topology I, 225;120 Probability and Statistics, 225;154 Introduction to Probability, and 225;154 Introduction to Mathematical Statistics I.

Pure Mathematics
Students interested in this area of mathematics should take two of the following courses: 225;120;121 Abstract Algebra I-II, 225;115-116 Introduction to Analysis I-II, 225;103-104 Functions of Mathematical I and 225;110 Elementary Topology I-II and at least two semesters of coursework outside this area, e.g., 225;177 Introduction to Computing with FORTRAN, 225;177 Programming with P/LI, 225;155 Introduction to Ordinary Differential Equations, 225;118 Complex Variables, 225;154 Introduction to Probability, or 225;144 Introduction to Mathematical Statistics I.

Probability and Statistics
The basis for this program is the calculus sequence 225;25-26 Calculus I-II, 225;28 Calculus III, and 225;27 Introduction to Linear Algebra or 225;35-37 Engineering Calculus I-II, 225;38 Differential Equations and Linear Algebra together with one of these three sequences: 225;153 Probability and 225;154 Introduction to Mathematical Statistics I, 225;153 Introduction to Probability and 225;187 Introduction to Stochastic Processes, or 225;130 Probability and Statistics and 225;158 Analysis and Design of Experiments or 225;162 Regression Analysis.

Students should also select one or two courses in computer science from 224;04-25 Introduction to Computing with FORTRAN, 225;177 Programming with P/LI, or 225;187 Assembly Language Programming, and one or two courses in mathematical analysis from 225;56 Fundamental Properties of Spaces and Functions, 225;154 Analysis for Applications and 225;115 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 100 and above excluding 225;102 and 225;125.

Additional courses may be selected from 225;56 Elements of Group Theory, 225;110 Elementary Topology I, 225;115 Introduction to Analysis I-II, 225;158 Complex Variables, 225;150 Matrix Theory, 225;170 Numerical Analysis: Nonlinear Equations and Approximation Theory, 386;141 Introduction to Operations Research, and 386;149 Digital Systems Simulation I.

Applied Mathematical Science
Correlates closely with William H. Kline, Karl E. Longenecker, Paul E. Behrens, James, et al., Ph.D.

Creative activity of an applied mathematician involves the formulation of scientific concepts and problems in mathematical terms; the extraction of the result of the analysis; the construction of new ideas and areas of application; and the development of mathematical theories in areas which have not hitherto been subjected to systematic mathematical treatment. These effects, in turn, lead to the generation of new mathematical ideas.
end 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 Mathematics at Iowa is an autonomous, broadly-based interdisciplinary program leading to the Doctor of Philosophy degree. The program hopes 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 “attitude” of an applied mathematical scientist by emphasizing the totality of the discipline.

Each student will have a committee of three or more faculty members to guide and carefully supervise his or her 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 aptitudes.

A major objective of the program is to have the development of each student’s dissertation follow the full cycle of research in applied scientific research. Guided by the supervising committee, each student is expected to identify and recognize a significant problem within his or her science. They then or she develops an appropriate mathematical model for that problem, critically examines that model with respect to its tractability and success in prediction, and develops improvements if necessary.

Students may enter after either a bachelor’s or a master’s degree. Applicants are expected to have an excellent background in science and mathematics, together with a desire to apply mathematics to the solution of relevant scientific questions. All applicants must satisfy the general requirements of the Graduate College.

Fellowships, graduate tuition scholarships and some research 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 program, write to the Chairman, Program in Applied Mathematical Science, Graduate College, The University of Iowa, Iowa City, Iowa 52242.

Computer Science

Department chair: Dr. J. Stereomen
Assistant professor: Cung Wu, Ying
Instructor: Helene N. Wulf
Degree offered: B.S., B.S.E. M.S., Ph.D.

Undergraduate Program

Undergraduates majoring in computer science should plan a strong background in mathematical 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
22M:25 Calculus I 4 s.h.
22M:26 Calculus II 4 s.h.
22M:27 Introduction to Linear Algebra 4 s.h.

Computer Science Core Requirements
22C:16 Introduction to Programming with PLI 3 s.h.
22C:17 Programming with PL/I 3 s.h.
22C:18 Assembly Language Programming 3 s.h.
22C:21 Data Structures 3 s.h.
22C:29 Programming Language Concepts 3 s.h.
22C:31 Introduction to Systems Software 3 s.h.
22C:32 Introduction to Systems Hardware 3 s.h.
22C:55 Elementary Numerical Analysis 3 s.h.
Total 35 s.h.

To receive a B.S. degree, the student must take two additional courses (each having at least 3 s.h.) in the Division of Mathematical Sciences. In addition, the student pursing 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 advisor 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 that 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 Sciences in planning interdisciplinary doctoral programs.

Although the plan of study of each advanced degree candidate is individualized to fit his or her needs, each student will be expected to study in the areas in computer 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. graduate will find careers as programmers or systems analysts in industry, business or government, as well as in directing and teaching computer courses.
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 ensure that the student achieves proficiency equivalent to that which can be gained by taking the following courses:

22C:122 Advanced Computer Organization and Architecture 3 s.h.
22C:123 Programming Language Foundations 3 s.h.
22C:135 Introduction to Computation Theory 3 s.h.
Other 22C courses selected from 118, 119, 127, 144, 145, 178, or any 200-level course 6 s.h.
Mathematics and statistics courses 6 s.h.
Additional courses selected by the student with the approval of the adviser 9 s.h.
Total 30 s.h.
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 hours 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.

Final Examination
The candidate for the M.S. degree must successfully complete one of the examinations listed below. Each is a three-hour written examination, except the thesis defense, which is oral.

Programming and Programming Languages Computer Systems and Hardware Computation and Automata Theory A thesis defense
Student should consult the Graduate Student's Handbook for further information.

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 it 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 may be prerequisites.

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, design of algorithms, simulation, artificial intelligence, and numerical analysis.
- Theory of computation, including automata theory, computability and formal languages, and analysis of algorithms: Mathematical foundations, including set theory, algebra, analysis, logic, and graph theory.
- Computer systems, including operating systems, computer architecture, and logical design and database systems.

Although the plan of study for each student will be drawn up by the student and his or her committees to fit any special needs, every student is expected to complete approximately half of the coursework in the first two categories above.

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 may be selected from:
- Algebra
- Analysis
- Logic and set theory
- Statistics and probability
- Numerical analysis
- Electrical engineering
- Operations Research
- Business administration
- Linguistics

Other related areas 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, the student must be recommended by a member of the computer science faculty. The comprehensive examination will normally be taken only when the student nears completion of coursework as required by the plan of study. There are three three-hour written examinations, which may be followed by an oral review:

Part I: On all aspects of programming and programming languages;
Part II: On the principles of computer architecture and operating systems; and
Part III: On the theoretical aspects of computer science, including automata theory, computability and formal language.

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 areas of new research and must also justify the originality and significance of the proposed contribution. An oral defense of the thesis is required.

Admission

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 2EC-108 Introduction to Programming with P/L and 2EC-127 Programming with P/L is recommended. In fields in which other programming languages are heavily used may find 2EC-100 Introduction to Computing with FORTRAN, 2EC-128 Assembly Language Programming or 2EC-109 Programming with COBOL more appropriate. The one-semester P/L course 2EC-110 Computing with P/L is recommended only for students with considerable programing experience using other languages.

Courses

Primarily for Undergraduates

2EC-006 Cooperative Education Training Assignment

2EC-21 Survey of Computing

2EC-31 Introduction to Computing with FORTRAN

2EC-32 Programming with COBOL

2EC-33 Introduction to Systems Hardware

2EC-34 Elementary Interaction Environments

2EC-35 Topics in Computer Science

2EC-36 Introduction to Programming with P/L

2EC-37 Assembly Language Programming

2EC-38 Programming with P/L

2EC-39 Programming with C

2EC-40 Programming with LISP

2EC-41 Programming with FORTRAN

2EC-42 Programming with PL/I

2EC-43 Programming with COBOL

2EC-44 Programming with Basic

2EC-45 Programming with Basic

2EC-46 Programming with Basic

2EC-47 Programming with Basic

2EC-48 Programming with Basic
Master of Science

Program I (designed for secondary school teachers)

Required courses
Two from 22M:115-116 Introduction to Analysis I-II and 22M:210-211 Analysis I-II, including either 22M:116 or 22M:211; Two from 22M:130-131 Abstract Algebra I-II and 22M:205-206 Introduction to Algebra I-II, including either 22M:121 or 22M:206; and Two in mathematics education.

Course Distribution
A minimum of 30 semester hours of graduate credit, including at least 24 semester hours in these Division of Mathematical Sciences courses or electives.

Any course in the Department of Mathematics numbered 100 or above, except 22M:105 Analysis for Applications; either 22C:122 Advanced Computer Organization and Architecture, 22C:123 Programming Languages Foundations, 22C:135 Introduction to Computation Theory 22C:145 Artificial Intelligence I, or any 100-level course in computer science; and Either 22S:183 Introduction to Probability, 22S:154 Introduction to Mathematical Statistics, 22S:187 Introduction to Stochastic Processes, or any statistics course having any of these as a prerequisite.

Program II

Required courses
Two from 22M:115-116 Introduction to Analysis I-II and 22M:210-211 Analysis I-II, including either 22M:116 or 22M:211; and Two from 22M:120-121 Abstract Algebra I-II and 22M:205-206 Introduction to Algebra I-II, including either 22M:121 or 22M:206.

Course distribution
At least 30 semester hours of credit, including a minimum of 24 semester hours in the Division of Mathematical Sciences, and a minimum of 12 semester hours in the Department of Mathematics from the courses listed below:

Any course numbered 100 and above except 22M:105 Analysis for Applications; 22C:122 Advanced Computer Organization and Architecture, 22C:123 Programming Languages Foundations, 22C:135 Introduction to Computation Theory, 22C:145 Artificial Intelligence I, or any 100-level course in computer science; and 22S:154 Introduction to Mathematical Statistics, 22S:155 Introduction to Probability, 22S:187 Introduction to Stochastic Processes, or a course which has any of these as a prerequisite.

Comprehensive Examination
With 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
For nondepartmental students on route to a Ph.D. in another area, required courses, course distribution same as Program I.

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; and Successful completion of the comprehensive Ph.D. examination in the chosen area.

A student in Program III will be assigned a mathematics advisor who will work with the student and the student’s advisor to choose an additional student advisor to help in the 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 M.S. degree in mathematics, a student must have completed work in undergraduate mathematics roughly equivalent to the program previously described for an undergraduate major in the Division of Mathematical Sciences. A student whose preparation does not meet this requirement may be required to take certain additional courses to cover the deficiency.

It is expected that candidates for the Master of Science degree will be able to complete their degree programs in four summer sessions or one academic year and one summer session. Required courses and a breadth selection of electives are offered regularly during summer sessions. In addition, each semester of the academic year will 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 candidate are a comprehensive examination, the writing of a thesis and a final examination. Ordinarily, the candidate must demonstrate to the advisor’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 these areas he or she wishes to be examined. The examinations are given each academic year. 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 advisor’s help in planning a course of study that will prepare them for the comprehensive qualifying examination. Students who enter after having taken some graduate work elsewhere should likewise consult an advisor for an evaluation of the previous work and the planning of further study.

A Ph.D. in mathematics education is also offered
offered. For further information, consult the brochure, Advanced Studies in Education, available from the College of Education.

Courses

Undergraduate: LR Division

These courses are not open to graduate students except for special arrangement with the Department.

23011 Basic Mathematical Techniques 3 s.h.
Integrals, functions, rates and proportions; algebraic, exponential and logarithmic functions; systems; equations and inequations; finite and infinite series; functions and fields. Prerequisites: one year of high school algebra, one year of high school geometry.

23022 Differential Equations 3 s.h.
equations and inequalities, functions and graphs, exponential and logarithmic functions, systems of equations and inequalities, functions and fields. Prerequisite: Calculus 1 and one year of high school algebra, one year of high school geometry.

23033 Elementary Statistics 3 s.h.
Probability, functions, correlation in 23022 and 23023 are encouraged to enroll in 23022 in its full length. Prerequisite: three years of high school mathematics.

23044 Introduction to Linear Algebra 3 s.h.
Vener diagrams, logics using high-rational probability using permutations and combinations, independence and conducting tests, finite algebra, vector spaces, sets from 3 s.h. 23022 or 23023.

23055 Introduction to Differential and Integral Calculus 3 s.h.
new results of calculus, vectors, functions, differential and integral calculus. Prerequisites: two years of high school algebra and one year of high school geometry or 23022.

23066 Calculus I 4 s.h.
Fundamental concepts, methods, techniques of single variable differential and integral calculus. Students in 23022 and 23023 are encouraged to enroll in 23022 in its full length. Prerequisite: three years of high school mathematics.

23077 Calculus II 4 s.h.
Continuous of 23066. Prerequisite: 23066.

23088 Calculus III 4 s.h.
Introduction to multivariable calculus, vector functions, line and surface integrals, partial derivatives, multiple integrals, vector fields, vector analysis, integral theorems. Prerequisites: Calculus 1 and 23055.

23099 Calculus Laboratory for Calculus I and Linear Algebra 2 s.h.
Use of computer as aid to understanding concepts and techniques of calculus and linear algebra. Computer use is mandatory in this course. Prerequisites: Calculus 1 and 23055.

23602 Fundamentals of College Mathematics 3 s.h.
Introduction to some main concepts in elementary algebra: set theory, Vener diagrams, logics using high-rational probability using permutations and combinations, independence and conducting tests, finite algebra, vector spaces, sets from 3 s.h. 23022 or 23023.

23611 Fundamentals of College Algebra 3 s.h.
Introduction to analytic geometry and trigonometry, introduction to some main concepts in elementary algebra: set theory, Vener diagrams, logics using high-rational probability using permutations and combinations, independence and conducting tests, finite algebra, vector spaces, sets from 3 s.h. 23022 or 23023.

23622 College Mathematics I 3 s.h.
College Mathematics II 3 s.h.
Prerequisites: two years of high school mathematics or 23022.

23633 College Mathematics III 3 s.h.
Calculus for the Biological Sciences 3 s.h.
Differential and integral calculus, topics in differential equations, multivariable calculus, matrices, and complex numbers. Applications to the sciences. Prerequisite: two years of high school mathematics or 23044.

23644 College Mathematics IV 3 s.h.
Elementary Functions 3 s.h.
Functions, graphs, correlation in 23022, trigonometric, logarithmic, exponential functions. Inverse trigonometric functions, properties of linear, exponential, and logarithmic functions. Prerequisite: one year of high school algebra and one year of high school geometry.

23655 Calculus of a Single Variable 4 s.h.
Fundamental concepts, methods, techniques of single variable differential and integral calculus. Students in 23022 and 23023 are encouraged to enroll in 23022 in its full length. Prerequisite: three years of high school mathematics.

23666 Calculus II 4 s.h.
Continuous of 23066. Prerequisite: 23066.

23677 Introduction to Linear Algebra 4 s.h.
The nature and geometry of three-dimensional Euclidean space and vectors in spaces are to be learned. Prerequisite: three years of high school mathematics.

23688 Calculus III 4 s.h.
Vector functions, line and surface integrals, partial derivatives, multiple integrals, vector fields, vector analysis, integral theorems. Prerequisites: Calculus 1 and 23055.

23699 Calculus Laboratory for Calculus I and Linear Algebra 2 s.h.
Use of computer as aid to understanding concepts and techniques of calculus and linear algebra. Computer use is mandatory in this course. Prerequisites: Calculus 1 and 23055.

23700 Introduction to Ordinary Differential Equations 3 s.h.
Ordinary differential equations, separable second-order equations, linear first-order equations, and exact equations. Prerequisite: Calculus 1.

23711 Introduction to Partial Differential Equations 3 s.h.
First-order partial differential equations, linear second-order equations, Laplace's equation, and wave equation. Prerequisite: Calculus 1.

23722 College Mathematics II 3 s.h.
Calculus II 4 s.h.
Continuous of 23066. Prerequisite: 23066.

23733 College Mathematics III 3 s.h.
Prerequisites: two years of high school mathematics or 23022.

23744 College Mathematics IV 3 s.h.
Calculus of a Single Variable 4 s.h.
Fundamental concepts, methods, techniques of single variable differential and integral calculus. Students in 23022 and 23023 are encouraged to enroll in 23022 in its full length. Prerequisite: three years of high school mathematics.

23755 Calculus II 4 s.h.
Continuous of 23066. Prerequisite: 23066.

23766 Calculus III 4 s.h.
The nature and geometry of three-dimensional Euclidean space and vectors in spaces are to be learned. Prerequisite: three years of high school mathematics.

23777 Introduction to Linear Algebra 4 s.h.
The nature and geometry of three-dimensional Euclidean space and vectors in spaces are to be learned. Prerequisite: three years of high school mathematics.

23788 Calculus III 4 s.h.
Vector functions, line and surface integrals, partial derivatives, multiple integrals, vector fields, vector analysis, integral theorems. Prerequisites: Calculus 1 and 23055.

23799 Calculus Laboratory for Calculus I and Linear Algebra 2 s.h.
Use of computer as aid to understanding concepts and techniques of calculus and linear algebra. Computer use is mandatory in this course. Prerequisites: Calculus 1 and 23055.

23800 Foundations of Mathematics I 3 s.h.
Introduction to the theory of numbers, sets, and logic. The properties of natural numbers, integers, rational numbers, real numbers, and complex numbers. Prerequisites: Calculus 1.

23811 Foundations of Mathematics II 3 s.h.
Prerequisites: Calculus 1.

23822 Analytical Geometry 3 s.h.
Differential and integral calculus, topics in differential equations, multivariable calculus, matrices, and complex numbers. Applications to the sciences. Prerequisite: two years of high school mathematics or 23044.

23833 College Mathematics IV 3 s.h.
Calculus of a Single Variable 4 s.h.
Fundamental concepts, methods, techniques of single variable differential and integral calculus. Students in 23022 and 23023 are encouraged to enroll in 23022 in its full length. Prerequisite: three years of high school mathematics.

23844 Calculus II 4 s.h.
Continuous of 23066. Prerequisite: 23066.

23855 Calculus III 4 s.h.
The nature and geometry of three-dimensional Euclidean space and vectors in spaces are to be learned. Prerequisite: three years of high school mathematics.

23866 Calculus III 4 s.h.
The nature and geometry of three-dimensional Euclidean space and vectors in spaces are to be learned. Prerequisite: three years of high school mathematics.

23877 Introduction to Linear Algebra 4 s.h.
The nature and geometry of three-dimensional Euclidean space and vectors in spaces are to be learned. Prerequisite: three years of high school mathematics.

23888 Calculus III 4 s.h.
The nature and geometry of three-dimensional Euclidean space and vectors in spaces are to be learned. Prerequisite: three years of high school mathematics.

23899 Calculus Laboratory for Calculus I and Linear Algebra 2 s.h.
Use of computer as aid to understanding concepts and techniques of calculus and linear algebra. Computer use is mandatory in this course. Prerequisites: Calculus 1 and 23055.

23900 Foundations of Mathematics I 3 s.h.
Introduction to the theory of numbers, sets, and logic. The properties of natural numbers, integers, rational numbers, real numbers, and complex numbers. Prerequisites: Calculus 1.

23911 Foundations of Mathematics II 3 s.h.
Prerequisites: Calculus 1.

23922 Analytical Geometry 3 s.h.
Differential and integral calculus, topics in differential equations, multivariable calculus, matrices, and complex numbers. Applications to the sciences. Prerequisite: two years of high school mathematics or 23044.

23933 College Mathematics IV 3 s.h.
Calculus of a Single Variable 4 s.h.
Fundamental concepts, methods, techniques of single variable differential and integral calculus. Students in 23022 and 23023 are encouraged to enroll in 23022 in its full length. Prerequisite: three years of high school mathematics.

23944 Calculus II 4 s.h.
Continuous of 23066. Prerequisite: 23066.

23955 Calculus III 4 s.h.
The nature and geometry of three-dimensional Euclidean space and vectors in spaces are to be learned. Prerequisite: three years of high school mathematics.

23966 Calculus III 4 s.h.
The nature and geometry of three-dimensional Euclidean space and vectors in spaces are to be learned. Prerequisite: three years of high school mathematics.

23977 Introduction to Linear Algebra 4 s.h.
The nature and geometry of three-dimensional Euclidean space and vectors in spaces are to be learned. Prerequisite: three years of high school mathematics.

23988 Calculus III 4 s.h.
The nature and geometry of three-dimensional Euclidean space and vectors in spaces are to be learned. Prerequisite: three years of high school mathematics.

23999 Calculus Laboratory for Calculus I and Linear Algebra 2 s.h.
Use of computer as aid to understanding concepts and techniques of calculus and linear algebra. Computer use is mandatory in this course. Prerequisites: Calculus 1 and 23055.
Actuarial Science
(with or without thesis)
225:153 Introduction to Probability
225:154 Introduction to Mathematical Statistics I
225:157-158 Actuarial Theory II
225:172 Statistical Analysis or
Actuarial
225:177 Seminar: Actuarial Theory
At least three courses from:
225:178 Graduation
225:183 Demography and Life Table Construction
225:184 Risk Theory
225:185 Theory of Pension Funding
Students must take at least one course from outside the Division of Mathematical Sciences, preferably from the College of Business Administration. The 225:153-154 requirement will be waived only if the student has passed Pat Two of the Examinations of Society of Actuaries.

Theoretical Statistics and Probability
(with or without thesis)
224:115 Introduction to Analysis I
225:153 Introduction to Probability
225:154-155 Introduction to Mathematical Statistics I
225:157 Introduction to Stochastic Processes
At least two of these:
225:170 Introduction to Nonparametric Statistics
225:172 Topics in Statistics
225:233-234 Theory of Statistics II
225:235 Linear Models
225:236 Multivariate Analysis
225:244-245 Theory of Probability I-II
Applied Statistics
(without thesis)
225:133 Introduction to Probability and Statistics
225:134 Introduction to Mathematical Statistics I
225:154 Analysis and Design of Experiments
225:156 Applied Time Series Analysis
or
225:157 Application of Multivariate Statistical Techniques
or
225:162 Regression Analysis
225:173 Statistical Computation and Consulting
At least two of these:
The remainder of the program will consist of selections from the above courses or, with the adviser's approval, courses in other fields related to the thesis.
Experience in a computer language (PL/I, FORTRAN, or BASIC) is required. If the student satisfies the requirement by taking a course, that course may not be counted toward the M.S.
Ordinarily involving 3 s.h. of 225:191 for two semesters, the typical thesis would be a statistical presentation of the results of a meaningful research project in another field, or a study of the characteristics of a new statistical method.

Doctor of Philosophy
To satisfy the course requirements for a Ph.D. in statistics, a student must successfully complete:
225:153 Introduction to Probability
225:154-155 Introduction to Mathematical Statistics I-II
225:158 Analysis and Design of Experiments
225:157 Introduction to Stochastic Processes
225:173 Statistical Computation and Consulting
225:171-116 Introduction to Analysis I-II
At least two of the following:
225:156 Applied Time Series Analysis
225:157 Application of Multivariate Statistical Techniques
225:162 Regression Analysis
225:170 Introduction to Nonparametric Statistics
At least five of the following:
225:233-234 Theory of Statistics I-II
225:235 Linear Models - Multivariate Analysis
225:244-245 Theory of Probability I-II
(II is recommended that students take 225:173, for at least two hours of credit in two different semesters.)
In addition, each s-writer a graduate student is registered for six or more credit hours, the student's registration must include at least one course of at least two hours of credit offered by the Statistics Department, other than 225:191 Individual Study.
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 in 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 2 semester hours of special problems (BI 14) Problems in Microbiology may count toward this requirement. Students desiring to apply for certification by the National Registry of Microbiologists are required to earn 30 s.h. of credit in biology, 20 semester hours of which must be 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:

Freshman Year

First Semester
4:13 Principles of Chemistry I 3 s.h.
22M:15 Mathematics for the Biological Sciences 4 s.h.
102 Rhetoric 4 s.h.
Total 13 s.h.

Second Semester
4:14 Principles of Chemistry II 3 s.h.
26:18 Elementary Chemistry Laboratory I 2 s.h.
Core course or *22M:26 Calculus I 3 s.h.
*22M:35 Calculus I 4 s.h.
*22M:35 Engineering Calculus I 4 s.h.
Total 13 s.h.

Sophomore Year

First Semester
4:121 Organic Chemistry I 3 s.h.
37:3 Principles of Animal Biology 5 s.h.
Core course or
*22M:26 Calculus II 4 s.h.
or
22N:36 Engineering Calculus II 4 s.h.
"01:157 General Microbiology 4 s.h.
Total 15 s.h.

Second Semester
4:122 Organic Chemistry II 3 s.h.
4:141 Intermediate Chemistry Laboratory I 2 s.h.
4:101 Elementary Quantitative Analysis 4 s.h.
Core, elective, or advanced microbiology courses 8 s.h.
Total 17 s.h.

Junior Year

First Semester
96:120 The Chemistry of Biological Materials 3 s.h.
26:11 College Physics 4 s.h.
Physical education 2 s.h.
Core, elective, or advanced microbiology courses 6-8 s.h.
Total 15-17 s.h.

Second Semester
96:111 Biochemistry 3 s.h.
26:17 College Physics 4 s.h.
Core, elective, or advanced microbiology courses 8 s.h.
Total 15 s.h.

Senior Year

Core, elective, or advanced microbiology courses 30-34 s.h.

*Optional, but may be desirable for students planning to do graduate work.

**May also be taken the first semester of the junior year.

The Honors Program

Open to seniors with a grade-point average of at least 3.5 overall and a 2.2 in microbiology courses, the Honors Program in Microbiology involves taking 20 semester hours of extra work in microbiology, including the semester hours in BI 171-172 Honors Microbiology. These two courses constitute an introduction to experimental research. At the end of the research, the student presents a written report. There is also an Honors examination. A student successfully completing these requirements receives the B.S. degree with honors.

Graduate Study, Faculty Roster, Courses

See "College of Medicine."

Military Science

(Army Reserve Officers Training Corps)

Department head: Lieutenant Colonel (Capt. J. Heseltine)
Faculty: Professor Capt. J. Heseltine (Mathematics Colonel), assistant professors Don M. Miller (Mathematics) and Don E. Inniha (Mathematics).

Programs

The policies of the Army Reserve Officers Training Corps (ROTC) program is to train female and male college students to become Army officers. Graduates receive second lieutenant's commissions. Participation is voluntary. The program is administered by the Department of Military Science, which is an academic department of the University. Offers credits applicable toward any degree awarded by the College of Liberal Arts. The Basic Course, taken over the freshman and sophomore years, provides instruction in the fundamentals of leadership development and military skills. Emphasis is placed on improvement in outdoor and physical activities. 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, military administration and management training, instruction in the theory and dynamics of
military operations, military staff procedures, and military law. Students who have not taken the Basic Course may enroll in the Advanced Course by attending a paid basic six-week summer training camp or by enrolling for a summer, on-campus Military Science course. Certain veterans may also be eligible for immediate entry into the Advanced Course.

Cadets attend a six-week paid advanced training camp at Fort Lewis, Washington, between the junior and senior years. Selected cadets may also participate in U.S. Army Ranger and Airborne training.

Credit For Prior Training

Students who have had military instruction elsewhere may receive credit for comparable coursework at IAW. All students with prior military experience should contact the Department to gain RC TC credit toward a commission.

Although the full Army-ROTC program normally spans four years, it can be completed in two, three, or four and a half years, with departmental approval.

Graduate School

Students commissioned as lieutenants upon graduation from IAW may apply for a delay of entry on active duty to attend graduate school. No additional time is required on active duty for such delays. Delays up to three years to attend medical, dental, and law schools are normally accepted.

Financial Aid

RC TC scholarships, prorating tuition, books, laboratory fees, and a $100 per month tax-free subsistence allowance, are available to high school seniors and students enrolled in Military Science courses. All cadets in the Advanced Course receive a $100 per month tax-free subsistence allowance. Cadets attend summer camps and Ranger and Airborne training: paid while there and receive travel allowances. Students are supplied with books for University courses taught by military faculty and uniform for training exercises. Veterans continue to draw both the RC TC allowances and any GI Bill benefits to which they are entitled.

Service Obligations

Completion of the Advanced Course entails a commitment to serve three years as an Army officer or approximately 60 days of active duty followed by service in an Army Reserve or National Guard unit in the Active Duty for Training (ADT) program for non-commissioned officer (NCO) cadets or by attending a ROTC scholarship accepts a four-year service commitment.

Special Programs

The Pershing Rifles and Black Sabres are fraternal organizations engaging in inter-collegiate military competitions and service activities. The Cadets are an auxiliary to the Pershing Rifles and members participate with cadets in many activities. The Department also sponsors a sea-borne rifle team which engages in national competition. Cadets compete for individual and national awards for leadership, academic achievement, athletics, and military proficiency. The Department sponsors military-orientated ceremonial and social activities to enrich the year, including the annual Military Ball, an awards ceremony, and several mixers and picnics.

Special Facilities

The Department uses several areas near Iowa City for practical problems and military skills instruction. It uses a variety of military equipment, such as helicopter radio towers, in the practical leadership exercises at the Pershing Rifles. Cadets visit Rock Island Arsenal, Rock Island Corps of Engineers District, and Caro 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.

Courses

2230 Problems in Military Service 1 h.s.

Students select courses and activities which include air traffic, operations, mapping, computer-aided engineering, physical conditioning, leadership training, survival training, computer-aided engineering, physical conditioning, leadership training, survival training, and basic electronics. Students receive 2000 air traffic training, 2001 problems in Military Service 1 h.s.

Students select courses and activities which include basic electronics, leadership training, survival training, and computer-aided engineering.

2235 Problems in Military Skills 1 h.s.

Students select courses and activities which include basic electronics, leadership training, survival training, and computer-aided engineering.
elective college work, counting as credit toward the B.A. or B.S. degree. All graduate work, museum courses may be credited as a full minor concentration on a master's, Degree in Anthropology or Science Education, or the Ph.D. degree in Science Education. Inquiries regarding program materials should be directed to the appropriate major department.

Techniques presented in the Museum Laboratory are of value only to those intending to pursue museum careers, but also to premedical, 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

[49 lines of text, partially visible]

Music

School director: Horace D'Armes

A primary element in a fine arts community, of international note, the University of Iowa School of Music has long been recognized as one of the excellent university-based schools of music in the United States. The School's on-campus enrollment of 600 students majoring in music is large enough to sustain strong programs in all areas of specialization, yet small enough to ensure the individual attention essential to each student's development.

The faculty consists of highly trained artist-instructors in every area of specialization. Faculty ensembles in residence include the Stratford String Quartet, Iowa Woodwind Ensemble, Iowa Brass Quintet, Percussion Quartet, Vocal Quartet and the Bassoon Players. Private lessons with faculty members are offered to all band and orchestra instruments, voice, piano, and organ.

At the undergraduate level, the School's curricula offer all qualified students at opportunity for the further study of music toward either professional or academic goals. The graduate curricula are designed primarily for advancement 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.S. is one year of college-level study, while the requirement for the B.A. is two years. All core requirements in both programs are performance, music education, music history and composition Thần.

General Requirements

All undergraduate enrollments require School of Music approval. Enrolling undergraduate students planning to major in music are expected to audition either in person or by tape recording in advance of registration. All freshman students must also take the Advisory Examination in music theory (see "Graduate Degrees"). Any serious deficiencies in theory must be removed through registration in 2511 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:

2511 Literature and Theory I-III 8 s.h.
2534 Art & Science 1-3 s.h.
2556 Literature and Theory II-III 6 s.h.
2574 Art & Science 1-3 s.h.
2582 History of Music I-II 6 s.h.
2571-72 Group Instruction in Piano I-II 2 s.h.
2594 Studio Performance 3-6 s.h.
2585 Recital Attendance 0 s.h.
2512 Directed Study 0-6 s.h.
2514 Senior Recital 0 s.h.
4 semester hours of electives from the following:
2515-19 Undergraduate Composition 2 s.h.
One of these: 2 s.h.
2513-17 Arranging for Band or Orchestra 2-4 s.h.
2518 Jazz Composition and Arranging 1-2 s.h.
2517 Orchestration 2 s.h.
2514-15 Contemporary Forms 3 s.h.
2514-17 Total Forms 3 s.h.
2514-16 Analysis of Music Literature 1800-1750 3 s.h.
25:149 Analysis of Music Literature, 1750-1825 3 s.h.
25:150 Analysis of Music Literature, 1825-1900 3 s.h.
25:151 Analysis of Music Literature, 1900-1950 3 s.h.
25:152 Analysis of Music Literature, Special Topics 3 s.h.
25:153 Through Bass Realization I 2 s.h.
25:212 Gregorian Chant 3 s.h.
25:215 Fugue 3 s.h.

Four years of applied music.

Four years of participation in band, orchestra or choir. Ensemble assignments are made at the discretion of the adviser and the ensemble conductors. Keyboard majors may substitute accompanying in place of large ensemble participation for two semesters under their junior and/or senior year, with the consent of their adviser. 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, 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.

String Majors

Instructor in performance is a requirement.

25:233 Cello, Cello, and basso majors take one year of 25:241 Violin.

25:100 String Literature 2 s.h.

25:103 String Literature 2 s.h.

25:106 Instrumental Literature 2 s.h.

7E:144 Methods and Materials: Elementary School Instrumental Music 2 s.h.

7E:191 Observation and Laboratory Practice in the Secondary School 6 s.h.

7E:192 Laboratory Practice in the Secondary School 6 s.h.

7E:197 Seminar: Curriculum and Student Teaching 1 s.h.

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 at residence at the University. In the marching band program, students are assigned by the director of bands to either Section I—Football Marching Band or Section II—Marching Band Techniques. Courses required:

Eight semester hours of 7E:141 Instrumental Techniques 25:107-108 Instrumental Conducting I-II 3 s.h.

7E:144 Methods and Materials: Elementary School Instrumental Music 2 s.h.

7E:138 Practicum Band Instrument Care and Repair 1 s.h.

7E:140 Band Methods and Materials 3 s.h.

7E:181 Observation and Laboratory Practice in the Secondary School 6 s.h.

7E:182 Laboratory Practice in the Secondary School 6 s.h.

7E:197 Seminar: Curriculum and Student Teaching 1 s.h.

Vocal and Keyboard Majors

7E:147 Choral Methods and Conducting 3 s.h.

7E:148 Choral Literature and Conducting 3 s.h.

25:115-116 Choral Literature 4 s.h.

7E:145 Methods and Materials: Elementary School General Music 3 s.h.

7E:142 Methods and Materials: Secondary School General Music 3 s.h.

7E:191 Observation and Laboratory Practice in the Secondary School 6 s.h.

7E:192 Laboratory Practice in the Elementary School 6 s.h.

7E:197 Seminar: Curriculum and Student Teaching 1 s.h.

7E:192 Laboratory Practice in the Elementary School 2 s.h.

Music Education

A student qualified for certification as an elementary school general music teacher by completing the approved certification program for elementary teachers and 22:23 semester hours as follows:

7E:119 Methods: Basic Skills and Techniques in Music Education 3 s.h.

7E:145 Methods and Materials: Elementary School General Music 3 s.h.

7E:192 Laboratory Practice in the Elementary School 2 s.h.

Applied music: (chorus, band, or orchestra) 2 s.h.

Music theory, literature, fundamentals, and music history, 16 s.h.

A student who wishes to complete an area of specialization in music without teacher certification may substitute other courses for 7E:192 with the adviser's approval.

Music Therapy

Admission to the program in music therapy is based on the demonstrated minimum keyboard skills and (b) successful completion of the introductory courses in music therapy 25:140. 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 psychology, social psychology, and medical psychology. A six-month
Applied Music Requirement

Until admitted to the program, the student must take private lessons on his or her major instrument or in voice. Following admission, the student undertakes applied music study as recommended by the advisory committee.

Ensemble Requirement

The candidate participates in an approved ensemble for four years.

Honors

A student with junior or senior standing may apply to take Honors work in music with the approval of the director of the College of Liberal Arts. Honors program, 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 25:87 Honors in Music. Types of Honors projects for which credit is given in 25:87 are Honors performances, solo and/or ensemble; Honors compositions, orchestrations, arrangements, and Honors exams, 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, Theory I-V, language, and languages is particularly recommended. As Honors committee members of at least three members are 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 undergraduate student must take the School of Music audiology 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 list of describing the general content of these tests may be obtained from the Doctor's Office, School of Music. (For general graduate admission, degree and examination requirements, see the "Graduate College" section of the Catalog.)

Master of Arts

The Master of Arts with thesis is offered in the areas of performance (including conducting, composition, music theory, and music history and literature). The Master of Arts without thesis is offered in the areas of music education and instrumental/vocal pedagogy (including accompanying). Both require a minimum of 60 post-baccalaureate semester hours. Information about specific admission and curriculum requirements for each is available from the School of Music. All curricula must include:

General

45:521 Introduction to Graduate Study 25:145 Counterpoint Forms 25:147 Tonal Forms

One elective in Analysis of Music Literature (music theory and literature) or equivalent.

If exempted from 25:145 or 25:147 as a result of the advisory examination, the student must take the primary one and the Analysis of Music Literature elective. If exempted from both 25:145 and 25:147, the student need take only the Analysis of Music Literature elective. Any serious music theory and ear training deficiencies revealed in the advisory examination are to be removed through PS:11 Review Theory.

Music History

25:301-302 Advanced History and Literature of Music I-II or equivalent, or satisfactory advisory examination score.

If exempted from 25:301 and/or 25:302 as a result of the advisory examination, the
student should select another course from the music history sequence 25:303-314, 25:318-317, 25:323, 25:320-332 and other musicology courses 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
25:194 Symphony Band, Wind Ensemble, Concert Band

**Doctoral Degrees**

**General Requirements**
All doctoral study in music involves:

Minimum course requirements listed under the M.A. degree

One or more additional courses in music history/musicology sequence indicated in the master's degree requirements 25:995 Physics of Sound and Music or equivalent

Reading proficiency in at least one foreign language (must be completed before comprehensive examination; music education students may substitute two courses in statistics for this requirement)

Dissertation


**Areas of Concentration**

The M.F.A. is for students of superior ability in the areas of composition, instrumental or choral performance, conducting, and opera theater directing, it requires a minimum of 48 post-degree course semester hours.

In addition to the entrance and curricular requirements for the Master of Arts degree, the student must also present at least two full-length recitals or programs (25:401 M.F.A. Thesis), for which a maximum of eight semester hours of credit will be granted. The student may write 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" edition of the Catalog for further details.)

**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 concert performance with orchestra or other appropriate ensembles. Viva voce 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 a unified 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 areas of concentration, as follows:

- Composition—representative musical scores
- Theory—analyzes or commentaries on musical works
- Music Education—evidence of materials required for admission (including conducting)—audition
- Music History and Musicology—research papers
- Pedagogy—contact School of Music 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 areas of composition, instrumental or choral performance, conducting, and opera theater directing, it requires a minimum of 48 post-degree course semester hours.

In addition to the entrance and curricular requirements for the Master of Arts degree, the student must also present at least two full-length recitals or programs (25:401 M.F.A. Thesis), for which a maximum of eight semester hours of credit will be granted. The student may write 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" edition of the Catalog for further details.)

**Doctoral Degrees**

**General Requirements**
All doctoral study in music involves:

Minimum course requirements listed under the M.A. degree

One or more additional courses in the music history/musicology sequence indicated in the master's degree requirements 25:995 Physics of Sound and Music or equivalent

Reading proficiency in at least one foreign language (must be completed before comprehensive examination; music education students may substitute two courses in statistics for this requirement)

Dissertation


**Doctor of Philosophy**

**Areas of Concentration**

The M.F.A. is for students of superior ability in the areas of composition, instrumental or choral performance, conducting, and opera theater directing, it requires a minimum of 48 post-degree course semester hours.

In addition to the entrance and curricular requirements for the Master of Arts degree, the student must also present at least two full-length recitals or programs (25:401 M.F.A. Thesis), for which a maximum of eight semester hours of credit will be granted. The student may write 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" edition of the Catalog for further details.)

**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 concert performance with orchestra or other appropriate ensembles. Viva voce 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.

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**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 areas of concentration, as follows:

- Composition—representative musical scores
- Theory—analyzes 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
- Kantorei
Music for Nonmajors

Students who are not majoring in music but have an exocational interest in it may find 25:150 Late 18th- and 19th-Century Composers, 25:160 Early 18th- and 20th-Century Composers or 11:59-40 Masterpieces of Music helpful in acquainting them with music as listeners. 25:230-231 World Music I-II is available for students interested in non-Western music. 25:10 Fundamentals of Music is for nonmajors who have little or no experience with notation, theory and aural skills. With the instructor's approval, nonmajors with an elementary background in music may register for 25:1-2 Literature and Theory I-II. Nonmajors interested in performance should consult music advisors regarding appropriate courses in applied music (voice and ensembles).

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 lib., dance, theater and creative writing areas. The Center encourages 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 expansion Hanover 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, 72 practice rooms, a large library, two electronic music laboratories, soundproof ear-training and listening laboratories with 60 listening posts, four large rehearsal halls, ample solo and ensemble practice facilities, professional recording facilities, eight practice rooms and radio labs. Jaffe Recital Hall, Hanover Auditorium, sits 2,680 people for concerts, 2,400 for concerts and other stage productions. Library resources include more than 50,000 volumes of music and books—which increasing at the rate of approximately 2,000 a year — and more than 2,100 reels of microfilm. A microfilm file of approximately 300 titles, nearly 5,000 Journals 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 microcomputer room, a typing room, a seminar and rare books room, a large reading area and a separate area for the Goldman Family Library, one of the world's most famous collections of hand music.

Courses

Primarily for Undergraduates

Theory and Composition

25:1 Literature and Theory I 2 s.h.
Music history, writing and criticism, musical styles and fundamental principles of harmony. Corequisite: 25:3.
25:2 Literature and Theory II 3 s.h.
25:4 Aural Skills I 1 s.h.
25:5 Aural Skills II 1 s.h.
25:8 Literature and Theory IV 3 s.h.
Continuation of 25:5, which incorporates Counterpoint, 25:6.
25:7 Aural Skills III 1 s.h.
25:8 Aural Skills IV 1 s.h.

25:10 Fundamentals of Music 3 s.h.
Musical notation; elementary metric, rhythmic and harmonic theory; basic survival skills; for students who have no previous experience. Not open to music majors.
25:11 Rhythm Theory 3 s.h.
25:12 Undergraduate Composition 2 s.h.
Prerequisite: 25:10.

History and Research

25:51 Recital Attendance 0 s.h.
25:52 History of Music I 3 s.h.
Prerequisites: music majors, 25:10 and two history electives. Consent of instructor.
25:53 History of Music II 3 s.h.
25:54 History of Music III 3 s.h.
25:55 History of Music IV 3 s.h.

25:72 Romanesque to Medieval 3 s.h.
Prerequisite: 25:51.

Music Education

Courses for Undergraduates and Graduates

Music Education

Where exact numbers are indicated, students preparing for Music Teacher Certification should register under education number.

25:71 Group Instruction in Flute I 3 s.h.
Beginning instruction for music majors whose principal performing medium is voice or an orchestral instrument. Instrument study includes development of skills in sight-reading, transposition, improvisation, improvisation and ensemble.

25:72 Group Instruction in Flute II 3 s.h.
25:73 Group Instruction in Flute III 3 s.h.
25:74 Group Instruction in Flute IV 3 s.h.
Prerequisites: 25:71 and 25:72. Consents of voice or ensemble teacher. Prerequisites: 25:51 or successful proficiency examination.

25:82 Percussion music Tastemakers 2 s.h.
Use of music in group recreational activities: emphasis on musical accomplishment and leadership techniques.

25:83 Class Singing 2 s.h.
Classes using string ensembles for study of a secondary instrument.

25:105 Instrumental Techniques 1 s.h.
Introduction to the techniques and performance skills in individual and group instruction. Corequisites: 25:113.

25:84 Wind and String Techniques 1 s.h.
Introduction to the techniques and performance skills in individual and group instruction. Corequisites: 25:113.

25:87 Wind and String Techniques 1 s.h.
25:88 Wind and String Techniques 1 s.h.
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25:103 Woodwind and String Techniques 1 s.h.
25:104 Woodwind and String Techniques 1 s.h.
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**Nuclear Medicine Technology**

- See "College of Medicine."
- See "College of Science and Technology."

**Philosophy**

- Department chair: John Adams
- Faculty professors: Peter Adams, Maya Brand, Pandar, Sheaf, Philip Cinnam, Caleb S. Stein
- Professor emeritus: Susan Seymour
- Associate professor: James Overberg
- Assistant professor: Evan Van
- Program director: John Talm, M.A., B.A., Ph.D.

**Undergraduate Program**

The undergraduate program in philosophy provides basic knowledge of the issues and the main developments in Western philosophy and strengthens logical skills which are useful in a wide variety of fields. A major in philosophy can provide preparation for the advanced studies necessary for a career in religion or law, for example, as well as for positions in government and business which require a general education and a capacity for clear and systematic thinking.

Advanced degree work is necessary for college teaching positions in philosophy.

Undergraduate majors are required to take at least 27 semester hours of courses numbered from 26:101 to 26:190, including:
- 26:103 Introduction to Logic
Honors 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. An individualized Honors program is developed by the student in consultation with his or her advisor in the Department. A student eligible for and interested in the program should consult with his or her advisor 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, and 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
Candidates for the doctoral program in philosophy are 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, a dissertation seminar, 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

Undergraduates Only

26:101 Introduction to Philosophy 3 s.h.
Analytical and systematic introduction to philosophical problems. Corequisite: 26:112 or consent of Instructor.

26:130 Philosophy of Nature 3 s.h.
Philosophical study of the nature of natural phenomena. Special problems of the relation of the natural sciences to the human sciences. Corequisite: 26:112 or consent of Instructor.

26:134 Philosophy of the Social Sciences 3 s.h.
Philosophical study of the social sciences. Special problems of the relation of the social sciences to the human sciences. Corequisite: 26:112 or consent of Instructor.

26:139 Philosophy of Religion 3 s.h.
Philosophical study of the nature of religious experience. Corequisite: 26:112 or consent of Instructor.

26:141 Existentialism 3 s.h.
Philosophical study of the nature of religious experience. Corequisite: 26:112 or consent of Instructor.

26:161 Metaphysics 3 s.h.
Selected problems in contemporary metaphysics. Prerequisite: consent of Instructor.

26:182 Epistemology 3 s.h.
Selected problems in contemporary epistemology. Prerequisite: consent of Instructor. Corequisite: 26:141.

26:100 Philosophy of Language 3 s.h.
Selected topics in contemporary philosophy of language. Prerequisite: consent of Instructor. Corequisite: 26:141.

26:103 Philosophy of Mind and Matter 2 s.h.
Philosophical study of certain problems of reality and knowledge.

26:107 Philosophy of Science 2 s.h.
Philosophical study of certain problems of reality and knowledge.

26:109 Philosophy of Mind 2 s.h.
Philosophical study of certain problems of reality and knowledge.

26:130 Philosophy of Nature 3 s.h.
Philosophical study of the nature of natural phenomena. Special problems of the relation of the natural sciences to the human sciences. Corequisite: 26:112 or consent of Instructor.

26:112 Analytical and systematic introduction to philosophical problems. Corequisite: 26:130 or consent of Instructor.

26:113 Early Modern Philosophy 3 s.h.
Modern and early modern issues such as Plato and Aristotle. Corequisite: 26:112 or consent of Instructor.

26:116 Medieval Philosophy 3 s.h.
Medieval and early modern issues such as Augustine and Aquinas.

26:117 Modern Philosophy 3 s.h.
Modern and early modern issues such as Plato and Aristotle. Corequisite: 26:116 or consent of Instructor.

26:120 Modern Philosophy 3 s.h.
Modern and early modern issues such as Plato and Aristotle.

26:121 Aristotelian Philosophy 3 s.h.
Aristotelian philosophy of the arts.

26:122 Political Philosophy 3 s.h.
Aristotelian philosophy of politics.

26:125 Philosophy of Modern Science 3 s.h.
Modern and early modern issues such as Plato and Aristotle.

26:131 Analytic Philosophy 3 s.h.
Analytic philosophy of the arts.

26:132 Ethics 3 s.h.
Analytic philosophy of ethics.

26:133 Philosophy of Religion 3 s.h.
Analytic philosophy of religion.

26:134 Philosophy of the Social Sciences 3 s.h.
Philosophical study of the social sciences. Special problems of the relation of the social sciences to the human sciences. Corequisite: 26:112 or consent of Instructor.

26:139 Philosophy of Religion 3 s.h.
Philosophical study of the nature of religious experience. Corequisite: 26:112 or consent of Instructor.

26:141 Existentialism 3 s.h.
Philosophical study of the nature of religious experience. Corequisite: 26:112 or consent of Instructor.

26:161 Metaphysics 3 s.h.
Selected problems in contemporary metaphysics. Prerequisite: consent of Instructor.

26:182 Epistemology 3 s.h.
Selected problems in contemporary epistemology. Prerequisite: consent of Instructor. Corequisite: 26:141.

26:100 Philosophy of Language 3 s.h.
Selected topics in contemporary philosophy of language. Prerequisite: consent of Instructor. Corequisite: 26:141.

26:103 Philosophy of Mind and Matter 2 s.h.
Philosophical study of certain problems of reality and knowledge.

26:107 Philosophy of Science 2 s.h.
Philosophical study of certain problems of reality and knowledge.

26:109 Philosophy of Mind 2 s.h.
Philosophical study of certain problems of reality and knowledge.

26:130 Philosophy of Nature 3 s.h.
Philosophical study of the nature of natural phenomena. Special problems of the relation of the natural sciences to the human sciences. Corequisite: 26:112 or consent of Instructor.

26:112 Analytical and systematic introduction to philosophical problems. Corequisite: 26:130 or consent of Instructor.

26:113 Early Modern Philosophy 3 s.h.
Modern and early modern issues such as Plato and Aristotle. Corequisite: 26:112 or consent of Instructor.

26:116 Medieval Philosophy 3 s.h.
Medieval and early modern issues such as Augustine and Aquinas.

26:117 Modern Philosophy 3 s.h.
Modern and early modern issues such as Plato and Aristotle.

26:120 Modern Philosophy 3 s.h.
Modern and early modern issues such as Plato and Aristotle.

26:121 Aristotelian Philosophy 3 s.h.
Aristotelian philosophy of the arts.

26:122 Political Philosophy 3 s.h.
Aristotelian philosophy of politics.
Primarily for Graduates

20.210 Mathematical Logic 3 s.h.
Main topics and techniques of mathematical logic. Open to undergraduate students with consent of instructor.

20.220 Philosophical Problems of the Social Sciences 3 s.h.
Examination and understanding of theories and reduction, roles of language, human nature and causality. Open to undergraduates with consent of instructor. Same as 26.155.

20.250 Philosophy of Science 3 s.h.
Major topics in the philosophy of science. Open to undergraduates with consent of instructor.

20.251 Seminar: Metaphysics 3 s.h.
May be repeated for credit.

20.252 Seminar: Epistemology 3 s.h.
May be repeated for credit.

20.253 Seminar: Philosophy of Analytical Philosophy 3 s.h.
May be repeated for credit.

20.254 Seminar: Philosophy of Logic 3 s.h.
May be repeated for credit.

20.255 Seminar: Philosophy of Science 3 s.h.
May be repeated for credit.

20.256 Seminar: Ethics 3 s.h.
May be repeated for credit.

20.257 Seminar: History of Philosophy 3 s.h.
May be repeated for credit.

24.300 Research: Vaught Theory 3 s.h.
May be repeated for credit.

24.307 Research: Metaphysics and Epistemology 3 s.h.
May be repeated for credit.

24.312 Research: Logic and Philosophy of Science 3 s.h.
May be repeated for credit.

24.313 Research: History of Philosophy 3 s.h.
May be repeated for credit.

26.27 Physical Education
The University offers instruction in physical education on the west campus (Field House) and on the east campus (Mielke Gymnasium). The Department on the west campus was formerly called the Department of Physical Education for Men and the Department on the east campus, Department of Physical Education for Women.

Physical Education—Field House
Head: Louis E. Alley
Faculty professor Louis E. Alley, Gerri L. jugaq, Donald G. Crayola, Charles M. Tipton
Associate professor Cyril D. Bostock, Gary F. Hansen, James D. Hay, R. Richard Holmes, David K. Leach, Jerry A. Magnard
Instructor Howard Kinnucan, David A. Hovey, Donald D. Wooten, Arthur J. Wender
Assistant professors Robert F. Arneson, J. A. Scott Baker, instructor Hoyt S. Wilson
Graduate assistants T. J. Rienzi, T. F. Tannenbaum, Larry Leidig, Linley K. Needham, Barry Nystul
Degree offered: B.S., B.S.E., M.A., Ph.D.

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. Though the recent job shortage 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 0 s.h.
27.20-21 Teaching of Recreational Sports 3 s.h.
27.31 Teaching of Gymnastics 2 s.h.
One of these seven coaching courses:
27.32 Coaching of Gymnastics 2 s.h.
27.33 Coaching of Football 2 s.h.
27.34 Coaching of Baseball 2 s.h.
27.35 Coaching of Track and Field Athletics 2 s.h.
27.36 Coaching of Basketball 2 s.h.
27.38 Coaching of Competitive Swimming 2 s.h.
27.39 Coaching of Wrestling 2 s.h.
27.37 Coaching of Swimming 2 s.h.
27.33 Human Anatomy 2 s.h.
27.21 First Aid 0 s.h.
27.27 Introduction to Athletic Training 2 s.h.
27.10 Administration of Physical Education and Athletics 2 s.h.
27.12 Advanced Physical Education 2 s.h.
27.27 Biomechanics of Physical Education 3 s.h.
27.23 Introduction to Human Perceptual-Motor Performance 3 s.h.
27.141 Elementary Exercise Physiology 3 s.h.
27.12 Introduction to Human Physiology 4 s.h.
58.142 Contemporary Issues of Health Education 3 s.h.

Required for certification in physical education:
76.71-72 Methods and Materials in Elementary School Physical Education 4 s.h.
or
27.20 Social Forms of Dance 1-2 s.h.
7P.75 Educational Psychology and Measurement 3 s.h.
7S.91 Pre-Education Practicum 1-2 s.h.
7S.100 Introduction to Secondary School Teaching 2 s.h.
7S.143 Methods in Secondary Physical Education 3 s.h.
7S.187 Seminar: Curriculum and Student Teaching 1-3 s.h.
7S.190 Individual Projects in Lab School 1-3 s.h.
7S.191 Observation and Laboratory Procedures in the Secondary School 1-3 s.h.
7S.192 Laboratory Practice in Elementary School 1-3 s.h.

Predoctoral Program
The predoctoral 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, biomechanics, history, and 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 areas in which the student is interested. Because the student needs not 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 courses required:
Endorsement for Athletic Trainers

This endorsement is provided for students who want to be certified as trainers for athletic teams at either the secondary school level as part of their regular teaching duties, or the college and university level. The courses required are designed to meet the standards for certification by the National Athletic Trainers Association and include:

17:11 Food Nutrition and Men or Women
17:142 Nutrition 3 s.h.
21:1 Elementary Psychology 4 s.h.
7:75:75 Educational Psychology and Measurement 3 s.h.
7:13 Introduction to Human Physiology 4 s.h.
26:142 Contemporary Issues of Health Education 3 s.h.
27:53 Human Anatomy 2 s.h.
27:58 First Aid 0 s.h.
27:57 Introduction to Athletic Training 2 s.h.
27:105 Adapted Physical Education 2 s.h.
27:107 Biomechanics of Physical Education 3 s.h.
27:141 Elementary Exercise Physiology 2 s.h.
27:171 Medical Supervision of Athletics 2-3 s.h.
27:182 Biomechanical Techniques in Athletic Training 2 s.h.
4:13:13 Athletic Training Modalities and Therapies 2 s.h.
27:184 Laboratory Practice in Athletic Training 2 s.h.

Pre-Physical Therapy Program

The pre-physical therapy program capitalizes on a unique juxtaposition of resources at Iowa. Within a six-block radius are located the Field House (which houses this Department), the College of Medicine, the University Hospitals, the Veterans Hospital, the Psychiatric Hospital and the University Hospital School for handicapped and mentally retarded children.

The proximity of these facilities, together with the close working relationship between the faculty of this Department and the faculties of various departments in the College of Medicine, offer an ideal setting for a pre-physical therapy program. Because there is a rapidly increasing demand for physical therapists who are willing to serve as athletic trainers for schools, colleges, 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 4 s.h.
27:31 Teaching of Gymnastics 2 s.h.
27:32 Teaching of Swimming 2 s.h.
27:53 Human Anatomy 2 s.h.
27:58 First Aid 0 s.h.
27:57 Introduction to Athletic Training 2 s.h.
27:58-59 Practical in Special Physical Education 6 s.h.
27:103 Administration of Physical Education and Athletics 2-3 s.h.
27:105 Adapted Physical Education 2 s.h.
27:107 Biomechanics of Physical Education 3 s.h.
27:108 Introduction to Human Perceptual-Motor Performance 3 s.h.
27:141 Elementary Exercise Physiology 2 s.h.
27:153 Advanced Anatomy and Kinesiology 2-3, 5 s.h.
4:13:14 Principles of Chemistry I-II 5 s.h.
4:18 Elementary Chemistry 2 s.h.
7:75:75 Educational Psychology and Measurement 3 s.h.
29:11-12 College Physics 8 s.h.
31:1 Elementary Psychology 4 s.h.
31:13 Psychology of Adjustment or Development 3 s.h.
31:183 Abnormal Psychology 3 s.h.
37:2 Principles of Animal Biology 5 s.h.
37:81 Principles of Human Genetics 4 s.h.
37:103 Comparative Vertebrate Anatomy 4 s.h.
28:123 Contemporary Issues in Health Education 0 s.h.
27:13 Introduction to Human Physiology 4 s.h.
Graduate Programs

M.A. without Thesis

The program leading to the M.A. degree without thesis is designed as a terminal unit of advanced study for teachers of basic physical education and for athletes coaches. Emphasis is placed on the application of research findings to the organization, teaching and evaluation of basic physical education programs for all students in schools and colleges, and to the coaching of interscholastic and intracollegiate athletic teams. Particular attention is given to problems associated with teaching and coaching in public schools and community colleges in Iowa. The placement of graduates with the M.A. degree without thesis has been excellent.

Undergraduate Prerequisites

The undergraduate coursework listed below is required. Any or all of this coursework may be taken after the student has been admitted to graduate study, but it should be taken at the earliest opportunity.

- Human anatomy 2 s.h.
- Human physiology 3 s.h.
- Personal hygiene (or equivalent) 2 s.h.
- Administration of physical education and athletics 2 s.h.
- Methods in physical education 2 s.h.
- Practice teaching (or equivalent) 3 s.h.
- Teaching of gymnastics 1 s.h.
- Teaching of swimming 1 s.h.
- Coaching 1 s.h.
- Electives in physical education and related fields 15 s.h.
- Total 30 s.h.

Credit may be given for experience and competence in techniques when such competence is demonstrated by examination.

Graduate requirements

For the M.A. degree without thesis, the student must complete a minimum of 30 semester hours, at least 24 of which must be in physical education, including 27:501 Non-thesis Seminar. At least one course must be selected from each of these three groups:

Group I

- 27:105 Adapted Physical Education 2 s.h.
- 27:167 Measurement and Evaluation in Physical Education 3 s.h.

Group II

- 27:242 Supervision of Physical Education 3 s.h.
- 27:267 Public School Curriculum in Physical Education 3 s.h.
- 27:358 Human Perceptual-Motor Performance 3-4 s.h.

Group III

- 27:127 Biomechanics of Athletics 3 s.h.
- 27:241 Scientific Principles of Physical Conditioning 3 s.h.

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 the 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 equip candidates with the nature and extent of research in all areas of physical education and to provide some degree of specialization in an area of particular interest to the student.

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. It should be taken at the earliest opportunity.

- Adapted physical education 3 s.h.
- Human anatomy 3 s.h.
- Human physiology 2 s.h.
- Methods in physical education or administration 3 s.h.

Administration of physical education and athletics 3 s.h.
- Intermediate algebra 3 s.h.
- Teaching of recreational sports 4 s.h.
- Practice teaching 2 s.h.
- Electives in physical education and related areas 11 s.h.
- Total 30 s.h.

In addition to these courses, undergraduate courses in chemistry, physics, zoology, microbiology, and the physiology of exercise are highly desirable and may be included as electives in related areas.

Graduate requirements

The courses listed below are required for the M.A. degree with thesis.

Nature and Extent of Field

- 27:240 Professional Preparation in Physical Education 2 s.h.
- Three courses selected from the following:
  - 72:205 Exercise Physiology 2 s.h.
  - 27:257 Biomechanics of Human Motion 4 s.h.
  - 27:267 Advanced Measurement and Evaluation in Physical Education 3 s.h.
  - 27:206 Human Perceptual-Motor Performance 4 s.h.
  - 27:357 Seminar in Research in Physical Education Curriculum 3 s.h.

Tools of Research

- 7P-143 Introduction to Statistical Methods 3 s.h.
- 63:151 Introduction to Statistical Methods 3 s.h.
- 202:100 Introduction to Computing with Fortran 3 s.h.
- 7P-248 Data Processing 3 s.h.

Specialization Area

- 27:401 Seminar in Scientific Writing 1 s.h.
- 27:404 Thesis: M.A. 4 s.h.
- Courses in specialization area approved by adviser 5-7 s.h.
- Total 30 s.h.

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 behavior, and therapeutics.

A broad background in all areas of physical education, together with a working knowledge of appropriate research techniques, is provided through the required courses in the M.A. with thesis curriculum and the core of courses required for all Ph.D. candidates. With the exception of six semester hours of statistics, all of these courses are taught by members of the 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. Professors from these departments participate in writing and evaluating the comprehensive examinations, serve on thesis committees for the initial presentation of the proposed problem, and participate in the final examination in which the candidate defends his or her thesis. In addition to writing a comprehensive examination in physical education, the candidate specializing in exercise physiology must write a comprehensive examination prepared and evaluated by faculty members of the Department of Physiology and Biochemistry in the College of Medicine. Such candidates graduate with minors in physiology.

Graduates of the Ph.D. program in physical education have obtained excellent positions in highly reputable colleges and universities throughout the United States and in a number of foreign countries.

Prerequisites

Completion of the requirements for the M.A. degree 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 elects to write a 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 requirements for at least one area of specialization.

The core requirements include:

27:405 Thesis, Ph.D. 12 s.h.

37:942 Selected Applications of Statistical Techniques 3 s.h.

or

63:102 Design and Analysis of Experiments in Biomedical Sciences 3 s.h.

and

27:202 Practicum in College Teaching 3 s.h.

The foreign language requirement differs for each area of specialization. All candidates not required to demonstrate proficiency in a foreign language must satisfactorily complete 27:240 Data Processing or 252:100 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 specialization. The courses required by area of specialization are:

Adapted Physical Education

78:110 Exceptional Children 3 s.h.

27:301 Research 3-6 s.h.

27:305 Adapted Physical Education: Special Topics and Research 4 s.h.

60:106 Human Anatomy and Neuroanatomy 4 s.h.

60:106 Human Anatomy and Neuroanatomy 4 s.h.

Administration and Supervision in Physical Education

27:342 Supervision of Physical Education 3 s.h.

70:201 Foundations of School Administration 3 s.h.

27:301 Research 4 s.h.

27:307 Advanced Administration of Physical Education 2 s.h.

27:307 Advanced Administration of Athletics 2 s.h.

27:340 Professional Preparation in Physical Education 2 s.h.
Facilities
The Recreation Building and Field House provide excellent facilities for use in the physical education skills programs, in the undergraduate and graduate instructional programs, and for student participation in intramural sports, recreational activities and aquatics.

Research laboratories for physiology of exercise, stress, motor behavior 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

7.1 Elective Physical Education 1 s.h.
   Elective for students who have met the physical education requirements for the major.

7.2 Elective Physical Education 1 s.h.

7.3 Elective Physical Education 1 s.h.

7.8 Introduction to Physical Education 1 s.h.

7.220 Teaching of Recreational Sports I 2 s.h.
   Techniques and methods of teaching organized group activities. Four semester.

7.222 Teaching of Recreational Sports II 2 s.h.
   Second semester. Continuation of 7.22.

7.211 Teaching of Sports Science 1 s.h.
   Teaching of the principles of coaching, exercise prescription, and handling competitive situations.

7.333 Counseling of Athletes 2 s.h.
   Preparation; high school varsity experience required or equivalent.

7.335 Coaching of Baseball 2 s.h.
   Second semester. Preparation: high school varsity experience required or equivalent.

7.337 Coaching of Track and Field Athletics 2 s.h.
   Second semester. Preparation: high school varsity experience required or equivalent.

7.339 Coaching of Swimming 2 s.h.
   Second semester. Preparation: high school varsity experience required or equivalent.

7.341 Coaching of Wrestling 2 s.h.
   Second semester. Preparation: high school varsity experience required or equivalent.

7.343 Coaching of Basketball 2 s.h.
   Second semester. Preparation: high school varsity experience required or equivalent.

7.345 Coaching of Football 2 s.h.
   Second semester. Preparation: high school varsity experience required or equivalent.

7.347 Coaching of Golf 2 s.h.

7.349 Coaching of Gymnastics 2 s.h.
   Preparation: high school varsity experience required or equivalent.

7.351 Coaching of Wrestling 2 s.h.
   Preparation: high school varsity experience required or equivalent.

7.353 Coaching of Swimming 2 s.h.
   Preparation: high school varsity experience required or equivalent.

7.355 Coaching of Basketball 2 s.h.
   Preparation: high school varsity experience required or equivalent.

7.357 Coaching of Football 2 s.h.
   Preparation: high school varsity experience required or equivalent.

7.359 Coaching of Track and Field Athletics 2 s.h.
   Preparation: high school varsity experience required or equivalent.

7.361 Coaching of Gymnastics 2 s.h.
   Preparation: high school varsity experience required or equivalent.

7.363 Coaching of Swimming 2 s.h.
   Preparation: high school varsity experience required or equivalent.

7.365 Coaching of Wrestling 2 s.h.
   Preparation: high school varsity experience required or equivalent.

7.367 Coaching of Basketball 2 s.h.
   Preparation: high school varsity experience required or equivalent.

7.369 Coaching of Football 2 s.h.
   Preparation: high school varsity experience required or equivalent.

7.371 Coaching of Tennis 2 s.h.

7.373 Coaching of Competitive Swimming 2 s.h.
   Preparation: high school varsity experience required or equivalent.

7.375 Coaching of Tennis 2 s.h.
   Preparation: high school varsity experience required or equivalent.

7.377 Coaching of Tennis 2 s.h.

7.379 Coaching of Tennis 2 s.h.

8.11 Advanced Exercise Physiology Seminar 1 s.h.

8.12 Advanced Exercise Physiology Seminar 1 s.h.

8.23 Advanced Exercise Physiology Seminar 1 s.h.

Admission Requirements

M.A. with and without Thesis
For admission to the program leading to the M.A. degree, without thesis, see the admission 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
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>27.115</td>
<td>Workshop: Chambers and Aging</td>
<td>1.0</td>
<td>This course explores the effects of aging on the body, focusing on physical aspects of aging.</td>
</tr>
<tr>
<td>27.130</td>
<td>Workshop in Advanced Athletic Coaching</td>
<td>2.0</td>
<td>Seminar session. Kilgore and Seifert.</td>
</tr>
<tr>
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</tr>
<tr>
<td>27.132</td>
<td>Seminar in Physical Education Programs</td>
<td>2.0</td>
<td>Seminar. Same as 7E-137, 7E-137.</td>
</tr>
<tr>
<td>27.147</td>
<td>Seminar on the Relationship between the Physical</td>
<td>3.0</td>
<td>Seminar. Same as 7E-137, 7E-137.</td>
</tr>
<tr>
<td>27.120</td>
<td>Seminar in the Relationship between the Physical</td>
<td>3.0</td>
<td>Seminar. Same as 7E-137, 7E-137.</td>
</tr>
<tr>
<td>27.150</td>
<td>Seminar in the Relationship between the Physical</td>
<td>3.0</td>
<td>Seminar. Same as 7E-137, 7E-137.</td>
</tr>
<tr>
<td>27.160</td>
<td>Seminar in the Relationship between the Physical</td>
<td>3.0</td>
<td>Seminar. Same as 7E-137, 7E-137.</td>
</tr>
<tr>
<td>27.170</td>
<td>Seminar in the Relationship between the Physical</td>
<td>3.0</td>
<td>Seminar. Same as 7E-137, 7E-137.</td>
</tr>
<tr>
<td>27.180</td>
<td>Seminar in the Relationship between the Physical</td>
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<td>Seminar. Same as 7E-137, 7E-137.</td>
</tr>
<tr>
<td>27.190</td>
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</tbody>
</table>

**Physics**

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<tbody>
<tr>
<td>27.130</td>
<td>Seminar in Physical Education Programs</td>
<td>2.0</td>
<td>Seminar. Same as 7E-137, 7E-137.</td>
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<tr>
<td>27.120</td>
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<tr>
<td>27.160</td>
<td>Seminar in Physical Education Programs</td>
<td>2.0</td>
<td>Seminar. Same as 7E-137, 7E-137.</td>
</tr>
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<td>27.170</td>
<td>Seminar in Physical Education Programs</td>
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<td>27.180</td>
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<td>27.190</td>
<td>Seminar in Physical Education Programs</td>
<td>2.0</td>
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**Primary for Graduates**

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>27.201</td>
<td>Research Methods in Physical Education</td>
<td>3.0</td>
<td>Seminar. Same as 7E-137, 7E-137.</td>
</tr>
<tr>
<td>27.202</td>
<td>Research Methods in Physical Education</td>
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<td>Seminar. Same as 7E-137, 7E-137.</td>
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<tr>
<td>27.203</td>
<td>Research Methods in Physical Education</td>
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</tr>
<tr>
<td>27.204</td>
<td>Research Methods in Physical Education</td>
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<td>Seminar. Same as 7E-137, 7E-137.</td>
</tr>
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<td>27.205</td>
<td>Research Methods in Physical Education</td>
<td>3.0</td>
<td>Seminar. Same as 7E-137, 7E-137.</td>
</tr>
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<td>27.206</td>
<td>Research Methods in Physical Education</td>
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<td>Seminar. Same as 7E-137, 7E-137.</td>
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<td>27.207</td>
<td>Research Methods in Physical Education</td>
<td>3.0</td>
<td>Seminar. Same as 7E-137, 7E-137.</td>
</tr>
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<td>27.208</td>
<td>Research Methods in Physical Education</td>
<td>3.0</td>
<td>Seminar. Same as 7E-137, 7E-137.</td>
</tr>
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<td>27.209</td>
<td>Research Methods in Physical Education</td>
<td>3.0</td>
<td>Seminar. Same as 7E-137, 7E-137.</td>
</tr>
<tr>
<td>27.210</td>
<td>Research Methods in Physical Education</td>
<td>3.0</td>
<td>Seminar. Same as 7E-137, 7E-137.</td>
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<td>27.211</td>
<td>Research Methods in Physical Education</td>
<td>3.0</td>
<td>Seminar. Same as 7E-137, 7E-137.</td>
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</table>

**Physical Education and Dance—Halsey Gymnasium**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>27.220</td>
<td>Physical Education and Dance—Halsey Gymnasium</td>
<td>3.0</td>
<td>Seminar. Same as 7E-137, 7E-137.</td>
</tr>
</tbody>
</table>

**Graduate Work**

Graduate work is offered through the Department of Physical Education at the University of Pennsylvania.}

**Physical Education Major Undergraduate Curriculum**

Each student in the physical education curriculum must complete a minimum of 36 credits, including courses in the humanities, social sciences, and natural sciences. Courses in this curriculum are designed to prepare students for careers in athletics, physical education, and related fields.

**Physical Education and Dance—Halsey Gymnasium**

Choral Director: Margaret G. Fox

Director of Physical Education: M. Douglas Beck

Instructor: E. L. Blackwell

Advisor: J. H. Allen

Advisors: J. H. Allen, M. L. Blackwell

Physical Education: M. Douglas Beck
Education). The teaching curriculum leads to either the B.A. or B.S. degree. A student failing to maintain a grade-point average of 2.0, or displaying marked inadequacies for teaching or a leadership role, may be dropped from the program.

The pre-physiological therapy curriculum leading to a B.S. degree is modeled on 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 nonprofessional 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 in preparation for a career but to give a broad acquaintanceship with material relevant to personal and family recreation and healthful living. Each student's program is individually planned with an advisor, following broad guidelines and oriented to the student's objectives.

**Physical Education Teaching Curriculum**

28:18 Senior Life Saving and Water Safety Instructor's Course 1-2 s.h.
28:19-20 Introduction to Human Movement 3 s.h.
28:25-28 Teaching of Sports 4 s.h.
28:27 Teaching of Dance 2 s.h.
28:31-32 Health and Diet 2 s.h.
28:37 Advanced First Aid 2 s.h.
Red Cross Certification
28:40 Tennis 1 s.h.
28:41 Golf 1 s.h.
28:42 Badminton 1 s.h.
28:43 Volleyball 1 s.h.
28:47 Gymnastics 2 s.h.
28:48 Bedroom Dance 1 s.h.
28:49 Field Sports 1 s.h.
28:50 Softball 1 s.h.
28:51 Field Hockey 1 s.h.
28:52 Basketball 1 s.h.
28:53 Modern Dance I or Jazz 1 s.h.
28:55 Track and Field 1 s.h.
28:57 Recreational Sports 1 s.h.
28:80 Anatomy 4 s.h.
28:81 Kinesiology 3 s.h.
28:93 Honors Readings arr.
28:94 Honors Readings arr.
28:109 Physiological Implications for Teaching Physical Education 3 s.h.
28:110 Physiological Implications for Teaching Physical Education for the Physically 3 s.h.
28:113 Measurement 2 s.h.
28:120 Organization and Administration of Physical Education 2 s.h.
28:121 History and Philosophy of Physical Education 1-2 s.h.
28:124 Contemporary Issues in Health Education 3 s.h.
78:71-72 Methods and Materials in Elementary School Physical Education 4 s.h.
78:148 Methods and Principles of Physical Education 3 s.h.
78:190 Individual Projects in Laboratory Practice (Coaching Practicum) 2-3 s.h.
78:191 Observation and Laboratory Practice in Secondary School 6 s.h.
78:192 Laboratory Practice in Elementary School 6 s.h.
78:197 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."

**Program Leading to Endorsement for Coaching**

28:14 Coaching Women's Sports or 2 s.h.
28:218 Advanced Coaching 2 s.h.
28:81 Kinesiology 3 s.h.
28:106 Care of Athletic Injuries 2 s.h.
28:108 Physiological Implications for Teaching Physical Education 3 s.h.
78:71 Methods and Materials in Elementary School Physical Education 2 s.h.
77:108 Child Development 3 s.h.
78:190 Individual Projects in Laboratory Practice (Coaching Practicum) 2-3 s.h.

**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 acquaintanceship with material relevant to personal and family recreation and healthful living. Each student's program is planned with an advisor on the basis of the student's objectives.

Basic courses for all in the nonprofessional major are 28:1, 28:7, 28:40-43, 28:47-57 or equivalent experience (combination of these for a total of seven to eight semester hours); 28:57 for a total of three hours and 104:61, 104:55 for a total of three to six semester hours.

Supplementary courses of 20 to 34 semester hours may be elected to complete a major of 36 semester hours. These elective hours should be from the following fields: art, dramatic art, environmental health, home economics, music, physical education, psychology, recreation or sociology. At least 18 of the 36 semester hours must be at the 200-level courses.

**Health Education Secondary Approval**

This secondary approval area (minimum standards, not a major) for Iowa Endorse- ment 20 teacher certification requires a minimum of 28 semester hours of credit, including the following required courses:

17:12 Growth and Development of the Young Child 3 s.h.
17:41 Food, Nutrition, and Men 3 s.h.
27:53 Human Anatomy 2 s.h.
88:80 Anatomy 4 s.h.
46:58 Non-Prescription Drugs 2 s.h.
27:58 First Aid 0 s.h.
28:37 Advanced First Aid 2 s.h.
Red Cross Certification
77:13 Introduction to Human Physiology 4 s.h.
78:142 Human Sexuality 3 s.h.
28:142 Contemporary Issues in Health Education 3 s.h.
28:194 Administration of School Health Program 3 s.h.
28:146 Health Instruction for Secondary Schools 3 s.h.

**Approval to Teach Health in Grades K-9**

To qualify for approval to teach health in grades K-9 within the elementary education program (Iowa Endorsement 10), the
students co 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 diversity 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 master's and doctoral candidates. The most common areas of specialization have been administration of athletics and physical education, coaching, measurement and evaluation, motor development, history and development of physical education and sport, sociology of sport, and sports communication. Internships are available in many areas, and are strongly encouraged for specializations in administration and communication. The graduate student group is cosmopolitan and international in make up. A research laboratory is available in Hasley Gymnasium. It is equipped primarily for kinesiological and biomechanics research and motor learning, including equipment for electromyographic research. Other needs may be met on a cooperative basis. Complete computer service is available as needed for research.

The Master of Arts Degree
The M.A. degree is awarded on completion of at least 30 semester hours of graduate work including these, or 32 hours including project. The curriculum may lead to teaching, administration, supervision in the schools, coaching, administration, or preparation for advanced degree work in the chosen area of specialization. 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 Physical Education for the Athlete 3 s.h.
*28:113 Measurement 2 s.h.
*28:119 Methods and Principles of Physical Education 3 s.h.
*28:121 History and Philosophy of Physical Education 2 s.h.
*28:205 Techniques of Research 3 s.h.
*28:215 Analysis of Human Motion 3 s.h.
*28:201 Problems in Physical Education 2 s.h.
or 28:401 Thesis 4 s.h.
*28:302 Seminar: Perspectives in Human Movement 2 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 adviser and the chair of the Department. A student may be permitted to take a nonrequisite M.A. Such a curriculum requires a minimum of 30 semester hours plus a project instead of a thesis and specified courses. Students may elect either a general master's program or a specialized curriculum. Specialized programs are offered in administration, coaching, dance, measurement and evaluation, motor development, philosophy of physical education and sport, sociology of physical education and sport, sports communications. Students desiring other specializations are encouraged to submit a course of study to the graduate committee for consideration.

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
As a basis for research and/or broad reading of international professional literature, students in the program must have an appropriate level of proficiency in statistical methods, and a minimum of first-year reading ability in a foreign language or, if it is an appropriate alternative, basic computer
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 toward a dance career.

Prerequisites
Audition intermediate modern or ballet technique
283:112 Rhythmic Analysis of Dance
283:114 History and Appreciation of Dance
283:123-124 Composition I-II
283:127 Dance Production
283:150 Anomaly

Electives

The Undergraduate Program

Required
283:112 Rhythmic Analysis of Dance
283:127 Dance Production

283:114 History and Appreciation of Dance
283:123-124 Composition I-II
283:171-172 Dance Company Class
283:177 Beginning Labanotation
381:100 Artistic Dance Laboratory

Electives

12 hours from the following or related subjects in theater, music, art:

*283:109 Teaching of Modern Dance
283:101 Independent Study
283:111 Methods and Materials of Teaching Children's Dance
283:113 Ballet Points
283:116 Dance in Education
283:117 Ballet Pedagogy
283:122 Workshop: Artist in Residence
283:125 Dance Production Laboratory
283:133 Improvisation
283:141 Introduction to Movement: Dynamics and Personality Growth
283:142 Introduction to Movement: Dynamics and Personality Growth
283:175 Readings in Dance
283:172-174 Composition I-II
283:175 Dance Theory
283:174 Criticism of Dance
283:173 Intermediate Labanotation
283:181 Dance Company Class

**Required of all dance majors in the teaching curriculum. 283:27 Advanced first Aid or Red Cross certification also required of all majors in teaching curriculum. See "College of Education" for certification requirements for public school teaching. Dance majors must take a technique class each semester with a maximum of 14 hours allowed toward a degree, and including a minimum of 4 s.h. of ballet and 4 s.h. of modern.
Physician's Assistant Program

See "College of Medicine."

Physics and Astronomy

DeBeerman, J. (4-year plan
Assistant dean and undergraduate advisor: Edward A. Nelson)


The Department of Physics and Astronomy provides comprehensive and rigorous instruction in all basic aspects of these subjects. In addition, it provides research facilities and guidance for individual scholarly work at an advanced level in selected specialties.

Total departmental enrollments are typically 1,200 student registrations during each semester of the academic year and 130 during the summer session. All courses and advanced laboratories are taught by full-time members of the faculty. Senior members of the faculty teach the elementary courses and supervise graduate student assistants who conduct the associated laboratories.

Beyond the elementary level, typical course enrolments are 20, and there is ample opportunity for individual work. Special undergraduate courses having similar enrollments are offered for majors in physics and for others with special interest in the subject. There are about 65 undergraduate majors—10 of whom are Honors students—and 45 graduate students in physics or astronomy.

About 40 percent of the graduates with bachelor's degree pursue advanced study. Others find positions in secondary school teaching and in government and industrial laboratories, or use their physics training as the basis for a career in another field.

Graduates of The University of Iowa with M.S. or Ph.D. degrees in physics or astronomy continue to find satisfactory employment in universities, colleges and research laboratories in government and industry, despite a recent national prnagement in such opportunities.

Undergraduate Major in Physics

The Bachelor of Science program is designed to serve either as preparation for graduate study in physics and related sciences, or as preparation for employment in industry. The Bachelor of Arts program is designed for students who wish a considerable knowledge of physics but who do not plan a research-oriented career in physics. This degree program can be useful to those planning careers in medicine, law, science-related administration, business, technical writing, or secondary-school science teaching.

The B.A. program requires fewer courses in physics and mathematics than the B.S. program, and thus provides for a wider choice of electives.

Bachelor of Science Degree

The following courses or their equivalents are required for the Bachelor of Science degree with a major in physics:

220:25-26 Calculus I-II (8 s.h.)
220:27 Introduction to Linear Algebra (4 s.h.)
220:28 Calculus III (4 s.h.)
220:35-37 Engineering Calculus I-II (12 s.h.)
220:38 Differential Equations and Linear Algebra (4 s.h.)
220:17-19 Introductory Physics I-II (12 s.h.)
220:15 Intermediate Mechanics (3 s.h.)
220:16 Intermediate Quantum Mechanics (3 s.h.)
220:18 Statistical Physics (3 s.h.)
220:19-130 Electricity and Magnetism (6 s.h.)
220:132 Intermediate Laboratory (4 s.h.)
220:191 Atomic Physics (2 semesters)

Two additional courses, one of them at the 190-level, selected from: 220:117, 220:128, 220:132 (an additional semester), 220:171, 220:191, 220:192, and 220:194; plus An additional course of Introductory coursework in another science or engineering field.

Physical Therapy

See "College of Medicine."
Undergraduate majors who plan to pursue graduate study are advised to go beyond the minimum requirements given above to the greatest feasible extent, including further work in mathematics.

**Bachelor of Arts Degree**

The following courses or their equivalents are required for the Bachelor of Arts degree with a major in physics:

- 22M:25-26 Calculus I-II 8 s.h.
- 22M:35-36 Engineering Calculus I-II 8 s.h.
- 25:17-18 Introductory Physics I-II 8 s.h.
- 29:11-12 College Physics 8 s.h.
- 29:10 Introductory Physics 3 s.h.
- 29:11 Intermediate Mechanics 3 s.h.
- 29:11-12 Statistical Physics 3 s.h.
- 29:12 Electronics 4 s.h.
- 29:120 Electricity and Magnetism 3 s.h.
- 29:12-13 Differential Equations and Linear Algebra 4 s.h.
- 29:17-18 Introductory Physics I-II 12 s.h.
- 29:61-65 General Astronomy 8 s.h.
- 29:115 Intermediate Mechanics 3 s.h.
- 29:116 Intermediate Quantum Mechanics 3 s.h.
- 29:119-120 Introduction to Stellar Astrophysics I-II 6 s.h.
- 29:129-130 Electricity and Magnetism 6 s.h.
- 29:132 Intermediate Laboratory (2 semesters) 2 s.h.
- 29:137 Astronomical Laboratory 2 s.h.
- 29:151 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 graduate requirements of the College of Liberal Arts, see "College of Liberal Arts."

**Honors**

Selected junior and senior majors may take the to eight semester hours of 29:59 Honors Seminars and conduct an investigation under the guidance of a faculty member as part of their program for the degree, Bachelor of Arts or Bachelor of Science with Honors in physics or astronomy.

**Graduate Program**

Two advanced degrees are offered in physics, the Master of Science (with or without thesis) and the Doctor of Philosophy; and one in astronomy, the Master of Science (with or without thesis). A student who wishes to pursue a program in astronomy beyond the M.S. level may qualify for a Doctor of Philosophy degree in physics with specialization, and a dissertation in astronomy or astrophysics.

An M.S. degree is not prerequisite to the Ph.D.

The Department of Physics and Astronomy cooperates in interdisciplinary doctoral programs in the Program in Applied Mathematical Sciences (see "Graduate College").

An interdisciplinary program leading to the B.S. and Ph.D. degrees in chemical physics is also available.

Each entering graduate student is assigned to a faculty adviser who will assist in preparing a plan of study and in guiding the student's progress. A graduate student becomes a candidate for an advanced degree in physics or astronomy only after passing a qualifying examination in all principal areas of the subject at the level of advanced undergraduate work. The examination is given during the first week of the second semester each year and must be taken by all first-year graduate students. After a student has selected a research specialty, the appropriate thesis or essay adviser then becomes the candidate's general adviser and the chair of the final examination committee.

**Master of Science Degree in Physics**

The M.S. degree is offered with thesis or without thesis. Either degree may be an intermediate step toward a Ph.D. degree, or it may be a terminal degree. The final examination in either case is an oral one conducted by a committee of three members of the graduate faculty appointed by the dean of the Graduate College.

The program for the M.S. degree with thesis requires 30 semester hours of graduate work and a thesis based on an original experimental or theoretical investigation by the candidate. No more than six of the required 30 semester hours may be for research (29:21 Research 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 (29:16 Individual Study). Up to one-third of the graduate program may be in related scientific fields other than physics and mathematics, e.g., chemistry, astronomy, engineering, etc.

The candidate for either of the M.S. degrees must have satisfactorily completed the following courses or their equivalents as an undergraduate or a graduate:

- 29:115 Intermediate Mechanics 3 s.h.
- 29:116 Introductory Quantum Mechanics 3 s.h.
29:117 Optics 3 s.h.
29:118 Statistical Physics 3 s.h.
29:129-130 Electricity and Magnetism 6 s.h.
29:166 Advanced Laboratory (2 semesters) 6 s.h.
29:170-172 Mathematical Methods of Physics 6 s.h.
29:191 Atomic Physics 3 s.h.
29:192 Nuclear Physics 3 s.h.
29:193 Introductory Solid State Physics 3 s.h.

The student's plan of study should provide for as much advanced work as possible within the previously stated major.

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). Course requirements:

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.
29:129-130 Electricity and Magnetism 6 s.h.
29:136 Advanced Laboratory 2 s.h.
29:137 Astronomical Laboratory 2 s.h.
29:170-172 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 astronomy with an astrophysics specialization should take the following courses as soon as possible:

29:131 Astrophysics I 3 s.h.
29:222-223 Theoretical Astrophysics I-II 6 s.h.
29:234 Stellar Structure and Evolution 4 s.h.
29:238 Special Topics in Astrophysics 2 s.h.
29:293 Seminar: Astrophysics 2 s.h.

Doctor of Philosophy Degree in Physics

The program of study for the Ph.D. degree with major in physics includes:

Thorough coursework in both classical and modern theoretical physics for all candidates, whether their specialized research is to be in an experimental or a theoretical area:

- Comprehensive examinations:
- Participation in advanced seminars:
- Original research in experimental physics, theoretical physics or astrophysics; and
- Preparation and defense of a written dissertation based on this work.

All candidates for the Ph.D. must take at least 27 semester hours of 200-level courses in the Department, excluding 29:220, 29:281 and seminars. The following minimum program is recommended as preparation for the comprehensive examinations:

29:191 Atomic Physics 3 s.h.
29:192 Nuclear Physics 3 s.h.
29:193 Introductory Solid State Physics 3 s.h.
29:202 Classical Mechanics 3 s.h.
29:212 Statistical Mechanics I 3 s.h.
29:213-214 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 29:170-172 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 a dissertation in paper form for formal presentation and has submitted it, with the approval of the research advisor or his or her representative, 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. The associated facilities of the University Computer Center are also available for research by students and staff of the Department, and several university 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 astronomy (optical and radio); low energy nuclear physics; plasma physics; solid state physics; magneto-optic physics; solar-terrestrial, interplanetary and planetary physics; and acoustics of musical instruments.

A major experimental space physics program is conducted in the Department. Extensive facilities are available for construction of equipment for satellites and spacecraft, for the reception of satellite telemetry, and for computerized decoding and analysis of data. An unusually versatile 6.4-MV Van de Graaff accelerator, which has been modified for energies up to 14 MeV, is used in studies of nuclear reactions induced by heavy ions, neutrons, lithium, and beryllium nuclei. Experiments on fundamental thermal, electrical, and magnetic properties of metals, alloys, and compounds are included in the experimental solid state program, as are surface studies of metals and semiconductors. Several experimental double plasma devices are used to study confinement, nonlinear waves, and turbulence effects in low temperature steady state plasmas.

Research is conducted in observational astronomy. The research observatory is well equipped for photometric and spectrophotometric observations. The primary instrument, a 24-inch reflector with a scanning spectrometer, is used for stellar and cometary studies. Research programs are planned on the 8.3-meter paraboloidal reflector located at the North Liberty Radio Observatory near Iowa City. Long-term research activities include intercontinental VLBI and special studies of OH masers. A 34-MHz Mills Cross array, one of the largest radio telescopes in the world, located at Clark Lake in California, is available for studies of the interplanetary medium.

Theoretical research is devoted to elementary particle and high energy physics; plasma physics; high-energy astrophysics; atomic, space, and planetary physics; solid state physics; and nuclear physics.

Persons qualified for graduate study are invited to apply for fellowships and assistantships. Further study should be directed to the head of the Department.
Courses

Physics

Prerequisites and corequisites are specified as guides and the instructor's approval is required for permission to enroll. An additional course may be required for transfer or for other reasons. Prerequisites and corequisites must be complete before the course is enrolled in, a prerequisite is a corequisite.

29:03 Reading in Physics

29:04 Undergraduate Seminar

29:10 Motion Physics

29:11 Dynamics and Statics

29:15 Intermediate Mechanics

29:16 Quantum Mechanics

29:17 Electricity and Electromagnetism

29:18 Electrodynamics

29:19 Nuclear Physics

29:20 Quantum Physics

For Undergraduates and Graduates

29:23 Reading in Physics

29:10 Motion Physics

29:11 Dynamics and Statics

29:16 Quantum Mechanics

29:17 Electricity and Electromagnetism

29:18 Electrodynamics

29:19 Nuclear Physics

29:20 Quantum Physics

Primarily for Undergraduates

29:04 Undergraduate Seminar

29:11 Dynamics and Statics

29:15 Intermediate Mechanics

29:16 Quantum Mechanics

29:17 Electricity and Electromagnetism

29:18 Electrodynamics

29:19 Nuclear Physics

29:20 Quantum Physics

Primarily for Graduates

29:22 Intermediate Laboratory

29:23 Reading in Physics

29:10 Motion Physics

29:11 Dynamics and Statics

29:15 Intermediate Mechanics

29:16 Quantum Mechanics

29:17 Electricity and Electromagnetism

29:18 Electrodynamics

29:19 Nuclear Physics

29:20 Quantum Physics

Liberal Arts/Physics and Astronomy
28:211 Mechanics of Continuous Media 3 a.h.
28:212 Advanced Fluid Dynamics 3 a.h.
28:213 Advanced Continuum Mechanics 3 a.h.
28:214 Advanced Thermodynamics 3 a.h.
28:215 Advanced Elasticity 3 a.h.
28:216 Advanced Solid Mechanics 3 a.h.
28:217 Advanced Theoretical Mechanics 3 a.h.
28:218 Advanced Statistical Mechanics 3 a.h.
28:219 Advanced Quantum Mechanics 3 a.h.
28:221 Advanced Relativity and Cosmology 3 a.h.
28:222 Advanced Statistical Mechanics 3 a.h.
28:223 Advanced Quantum Mechanics 3 a.h.
28:224 Advanced Quantum Field Theory 3 a.h.
28:225 Advanced Quantum Information 3 a.h.
28:226 Advanced Quantum Computation 3 a.h.
28:227 Advanced Quantum Computing 3 a.h.
28:228 Advanced Quantum Computing 3 a.h.
28:229 Advanced Quantum Computing 3 a.h.
28:230 Advanced Quantum Computing 3 a.h.
28:231 Advanced Quantum Computing 3 a.h.
28:232 Advanced Quantum Computing 3 a.h.
28:233 Advanced Quantum Computing 3 a.h.
28:234 Advanced Quantum Computing 3 a.h.
28:235 Advanced Quantum Computing 3 a.h.
28:236 Advanced Quantum Computing 3 a.h.
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Bachelor of Science

Requirements for the B.S. in political science are the same as for the B.A., except for the following: 1) only two semesters of a foreign language are required; 2) in requirement 2, Linguistics replaces Journalism and Literature, Science, and the arts (as excluded); and 3) the student must take three semesters of mathematics or statistics.

Courses recommended for the mathematics/statistics requirement:

- 22M:25-26 Calculus I-II
- 22S:102 Introduction to Statistical Methods
- 22S:148 Intermediate Statistical Methods

Other courses may be used, with the written approval of the director of undergraduate studies in Political Science.

Teaching Major

Undergraduates planning to teach in the social sciences with an emphasis on political science must meet these requirements:

1) Same political science course requirements as for the B.A. and B.S., except that the minimum requirement in political science courses numbered above 100 is eight semester hours.

2) Twelve semester hours of courses in each of two of these areas: American history, anthropology, economics, geography, psychology, or 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 30 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 3.6. Honors students must choose 30:180 Honors Introduction to Political Inquiry and must complete at least two semesters of work in the advanced 30:182-183 Honors Seminar with a grade of B or better each semester. Students interested in seeking a B.A. degree with Honors should contact the Honors Program advisor prior to the beginning of the junior year.

Graduate Programs

At the graduate level, the Department emphasizes the program leading to the degree of Doctor of Philosophy in political science, which is particularly appropriate for students planning a scholarly academic career; and the Master of Arts in Public Affairs program, which is designed for students who wish to prepare for careers in government service, public affairs, or civic education teaching in secondary schools or joint and community colleges. The general Master of Arts degree is normally pursued by persons whose ultimate degree objective is the Ph.D.

Master of Arts in Public Affairs

Although all students in the public affairs program must take the core courses indicated in the schedule below, elective opportunities make possible several areas of specialization. Students interested in public administration may use their elective credit to take further courses in courses in public administration, administrative theory and behavior, or quantitative analysis. Students interested in public policy analysis may use their elective credit to take courses in quantitative research methods, and courses seeking with substantive policy fields such as economic policy, health policy, natural resources policy, or social policy.

This is a nonthesis 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 sufficiently flexible to accommodate students who may require additional time to meet all degree requirements.
Doctor of Philosophy Program

Students are encouraged to seek the Ph.D. only after they have demonstrated their scholarly competence over at least two semesters of graduate study. Requirements for the Ph.D. include completion of at least three academic years in residence and 72 semester hours of graduate-level credit, including work for the M.A. and transfer credits; receipt of the M.A. degree; at least one semester each of special supervised training in teaching and in research; demonstration of command of appropriate research skills; passage of a comprehensive examination; preparation of a dissertation; and the final examination.

The Tool Requirement

The student seeking a Ph.D. degree must demonstrate command of one foreign language or other tool of research, selected with the approval of the doctoral committee. If the tool is other than a foreign language, the student’s doctoral committee will specify the criteria to determine whether the requirement has been met. The tool requirement must be met before the student takes the comprehensive examination.

Comprehensive Examination

Students must take the comprehensive examination after completing the sixth semester of residence, or in the first examination period following their attainment of 45 hours of graduate credit, whichever comes later.

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 Methodology of Political Science

Before taking the written examinations, candidates must present a written dissertation proposal, and must explain and defend the proposal in an oral examination, which may also deal with any matter relevant to the written examinations.

Teaching and Research Training

Each Ph.D. candidate in political science must take at least one semester of special supervised training in teaching and in research. This restriction is normally given in association with the student’s service as a teaching or research assistant.

Dissertation

Not more than 30 semester hours of credit are allowed for the preparation of a dissertation, and students may not register for credit for teaching or research solely for work on their dissertation.

Further Information

A comprehensive statement of departmental requirements is set forth in the Guide to Graduate Study in Political Science. For general graduate admission and degree requirements, see "Graduate College."

Special Facilities

The Laboratory for Political Research provides logistical and technical support for undergraduate and graduate teaching and research programs undertaken by the Department of Political Science. The laboratory assists faculty members in utilizing 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 in every level of advanced study.

The Social Science Data Archive holds more than 450 data collections, and the laboratory is a user center for the data from the 1970 United States Census. The facilities of the laboratory include a card-reader/write-printer, two communications terminals, three nod punchers, and a counter-sorter. The laboratory also supervises the College of Liberal Arts Mini-Computer Terminal Center for the social sciences, which houses
The B.S. program must include the following courses, or equivalents: 31:11 Elementary Psychology or 31:3 General Psychology; 31:143 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 three-groupings given below, with at least three of these four core electives being 100-level courses. Candidates for the B.S. degree in psychology must satisfy the College of Liberal Arts native 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 (Biopsychology and Psychophysiological Psychology)
31:0 Comparative Psychophysiology and Ethology
31:123 Psychology of Learning
31:125 Brain Function and Learning
31:126 Psychophysics and Psychology of Perception
31:128 Introduction to Behavioral Pharmacology
31:129 Biological Aspects of Behavior
31:135 Developmental Behavior Analysis

Area B (Clinical Psychology)
31:135 Psychology of Adjustment
31:105 Personality
31:181 Current Theories of Schizophrenia
31:163 Abnormal Psychology
31:189 Abnormal Child Psychology
31:170 Behavior Modification

Area C (Developmental Psychology)
31:14 Introduction to Child Psychology
31:112 Development of Social Affirmation
31:114 Cognitive Development of Children

Area D (General Experimental Psychology)
31:146 Individual Differences in Developmental Psychology
31:130 Psychology of Language I
31:132 Psychology of Language II
*Only one or two courses can be used to satisfy all area requirements.

Area E (Social Psychology)
31:15 Introduction to Social Psychology
31:103 Development of Children's Social Behavior
31:100 Attitude Change
31:06 Small Group Processes

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. Students ordinarily are selected to participate in the Department's 31:95 Honors Seminar in Psychology during the spring semester of the junior year. Interested majors should contact the Department Honors Advisor early in the junior year.

Graduate Program

The graduate program in Psychology is designed to provide comprehensive training leading to the Ph.D. degree with emphases in one of the following broad training areas: animal learning and biopsychology, child and developmental psychology, clinical psychology, general experimental psychology, social psychology. The program is planned to provide both general training and specialization 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 contemporary knowledge about behavioral processes, thoroughly trained in the methods and techniques of careful investigation of field and applied problems, and deemed to be qualified contributors to the discipline of psychology and to society generally.

The most appropriate jobs for graduates of this program are in academic, governmental, business, or private institutions which provide opportunities for continuing analysis of the investigation of fundamental questions about behavior for testing research results and methodologies, 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 one additional year in this department depending on the nature and extent of previous research activity.

The M.A. with Thesis

The Master of Arts degree with thesis requires is required for all students intending 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 graduate credit, including requirements specified by the department: 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 is also available and may be the student's primary objective for certain special students. It is usually the degree taken by those
During the letter part of third year and the first part of the fourth year, and while continuing selected coursework and ad- vanced seminars, the student develops a prospectus for the dissertation research. Following approval of the prospectus, work toward the Ph.D. proceeds with the conduct of the doctoral study, preparation of the dissertation and, finally, the Ph.D. oral examination, which is on 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 focus of the program in animal learning and behavior is on the analysis of learning and motivation, primarily in nonhuman animals. Through the application of behavioral and biological principles, students in this program will have the opportunity to learn the most modern behavioral and technical methods in computer-assisted experimentation, electronic instrumentation, neuroanatomical and histological techniques, and biochemical assays procedures. Special faculty and graduate students are involved in the teaching of classical and operant conditioning, animal learning and behavior, motivation, neuroendocrinology, neuroanatomy, and neurobiology.

The child and developmental psychology program provides opportunities for students to acquire a general understanding of the child-developmental task, as well as a focused understanding of developmental trends within a specific field. Specialized areas include: infancy and perceptual processes, verbal processes and memory, learning and thinking, social processes, and psychopathology.

The clinical program strongly emphasizes an empirical approach to the study of psychology. It is designed for students who are primarily interested in developing theoretically understanding of clinical phenomena and in studying research skills necessary to the systematic investigation of such phenomena. Recognizing that students must become familiar with clinical material and competent in clinical skills, practicum experience in the Department's internship and training Clinic is closely integrated with coursework in the content, theory and research methods of psychology and with supervised research experience. Students may develop special competence in such areas as psychotherapy, psychophysiology, psychotherapy, therapy, schizophrenia, psychopathology, clinical neuro- physiologist, and clinical-developmental psychology. A special training program is supervised jointly by faculty members from the clinical area and from the child and developmental area is available for students with interests in clinical aspects of childhood and development. Advanced students have opportunities for additional clinical experiences in placements with local agencies such as the Veterans Administration Hospital, the Iowa Psychiatric Hospital, the Hospital for Handicapped Children and the Outpatient Neuropsychiatric Clinic. Students ordinarily also complete a one-year internship at an accredited clinical facility either before or after completion of the four-year academic program. The clinical training program is fully approved by the American Psychiatric Association.

The general experiential program focuses primarily on the study of human behavior. Three major 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, memory, attention, and consciousness. Students with interests in sensation and perception may concentrate on visual perception, auditory processes, or mathematical models in perception and psychophysics. Students in experimental child psychology specialize in areas such as Batiment learning, problem-solving and transfer of training. All students in the general experiential program develop specialization in laboratory techniques, controlled data collection 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.

The social psychology program offers specialized training in three subareas: social influences on behavior, attitude and opinion change, and the psychology of groups. The first of these includes phenomena of social learning, impression, conformity, social facilitation, and social reinforcement. The second includes...
attitude acquisition, cognitive consistency and the notions of commitment, persuasion and ambivalence. Under the third subarea, one might focus on group versus individual performance, or interdependence or independence in the context of attitude acquisition. In addition to thoroug}
3/14 \ Introduction to Mental Processes 3 a.b.
- Overview of the study of individual human cognition, personality, behavior, memory, language, learning, problem solving, decision making and thinking, considered from information-processing, evolutionary, and other perspectives. Students will also have had 3 a.b-a and 3 a.b-b for their majors in other departments.

3/15 \ Educational Psychology and Measurement 3 a.b.
- Series on P575.

3/16 \ Psychology in Business and Industry 3 a.b.
- Applications of psychological theory to the world of business, emphasizing industrial psychology, work attitudes, motivation, and job performance and selection.

3/17 \ Testing Psychophysiological Research 2, 4 b.
- Concepts and procedures related to the design, elicitation, and utilization of selected behavior. Theoretical concern is oriented towards research relating to performance and problem solving, relevant topics include: motivation, learning, perception, memory, problem solving, and decision making.

3/18 \ Cognitive Psychology and Physiology 3 a.b.
- Survey of and experimental work in the study of personal behaviors and the relationships of actions in human and non-human subjects to the environment, including learning, memory, consciousness, attention, motivation, and emotion.

3/19 \ Language and Psychology 3 a.b.
- Analysis of the role of language in perception, communication, cognition, and the development of thought. Students will also have had 3 a.b-a and 3 a.b-b for their majors in other departments.

3/20 \ Research Procedures in Psychology 3 a.
- Small groups investigating research projects in psychology. Includes literature review, planning, conducting, and analyzing data. May be repeated for credit. Restrictions: permission of instructor. P34 40-80.

3/21 \ Social Research and Analysis 3 a.
- For students investigating research projects in psychology. Prerequisites: permission of instructor and approval of Department chair. P34 40-80.

3/22 \ Students' Seminar in Psychology 3 a.
- Lecture section in which research in areas of interest in research and reading in psychology is discussed in detail by students. Permission.

3/23 \ Honors Thesis Research 3 a.
- Supervised research project, leading to written thesis and oral defense. Open only to Honors students.

For Undergraduates and Graduates

3/24 \ Social Psychology 3 a.
- Current research activities in social psychology. Primary emphasis on the study of the social aspects of human behavior and the evolution of contemporary theories and methodologies.

3/25 \ Psychology of the Attractive 3 a.
- Analysis of the nature of generalized, social, and personal attractiveness. Undergraduate students only. Credit. Prerequisites: permission of instructor. P34 40-80.

3/26 \ Development of Children's Social Behavior 3 a.
- Emphasis on different strategies of research, including experimental, observation, and naturalistic observations. Prerequisites: permission of instructor.

3/27 \ Experimental Social Psychology 3 a.
- Emphasis on the study of attitudes, motivation, and human behavior from a psychological perspective. Students will also have had 3 a.b-a and 3 a.b-b for their majors in other departments.

3/28 \ Personality 3 a.
- Personality theory, research on the nature of attitudes and behaviors, and the development of psychological theory.

3/29 \ Psychology of Aging 3 a.
- Survey of current knowledge of the nature of aging and the development of psychological theory.

3/30 \ Child Development 3 a.
- Current developments in the study of children's cognitive, emotional, and social development. Students will also have had 3 a.b-a and 3 a.b-b for their majors in other departments.

4/1 \ Medical Psychology I 3 a.
- Survey of current knowledge of the nature of aging and the development of psychological theory.

4/2 \ Medical Psychology II 3 a.
- Survey of current knowledge of the nature of aging and the development of psychological theory.

4/3 \ Psychology of Sex Differences 3 a.
- Topics on the nature of sex differences in behavior, motivation, learning, and the development of psychological theory.

4/4 \ Developmental Children 3 a.
- Students will also have had 3 a.b-a and 3 a.b-b for their majors in other departments.

4/5 \ Memory, Learning and Conceptual Processes 3 a.
- An introduction to contemporary psychological theories and research.

4/6 \ Cognitive Psychology I 3 a.
- An introduction to contemporary psychological theories and research.

4/7 \ Cognitive Psychology II 3 a.
- Laboratory study of problem-solving, decision making, and perception. Students will also have had 3 a.b-a and 3 a.b-b for their majors in other departments.

4/8 \ Developmental Psychology I 3 a.
- Laboratory study of problem-solving, decision making, and perception. Students will also have had 3 a.b-a and 3 a.b-b for their majors in other departments.

4/9 \ Personality 3 a.
- Personality theory, research on the nature of attitudes and behaviors, and the development of psychological theory.

4/10 \ Medical Psychology I 3 a.
- Survey of current knowledge of the nature of aging and the development of psychological theory.

4/11 \ Medical Psychology II 3 a.
- Survey of current knowledge of the nature of aging and the development of psychological theory.

4/12 \ Psychology of Sex Differences 3 a.
- Topics on the nature of sex differences in behavior, motivation, learning, and the development of psychological theory.

4/13 \ Developmental Children 3 a.
- Students will also have had 3 a.b-a and 3 a.b-b for their majors in other departments.

4/14 \ Memory, Learning and Conceptual Processes 3 a.
- An introduction to contemporary psychological theories and research.

4/15 \ Cognitive Psychology I 3 a.
- An introduction to contemporary psychological theories and research.

4/16 \ Cognitive Psychology II 3 a.
- Laboratory study of problem-solving, decision making, and perception. Students will also have had 3 a.b-a and 3 a.b-b for their majors in other departments.

4/17 \ Developmental Psychology I 3 a.
- Laboratory study of problem-solving, decision making, and perception. Students will also have had 3 a.b-a and 3 a.b-b for their majors in other departments.

4/18 \ Personality 3 a.
- Personality theory, research on the nature of attitudes and behaviors, and the development of psychological theory.

4/19 \ Medical Psychology I 3 a.
- Survey of current knowledge of the nature of aging and the development of psychological theory.

4/20 \ Medical Psychology II 3 a.
- Survey of current knowledge of the nature of aging and the development of psychological theory.

4/21 \ Psychology of Sex Differences 3 a.
- Topics on the nature of sex differences in behavior, motivation, learning, and the development of psychological theory.

4/22 \ Developmental Children 3 a.
- Students will also have had 3 a.b-a and 3 a.b-b for their majors in other departments.

4/23 \ Memory, Learning and Conceptual Processes 3 a.
- An introduction to contemporary psychological theories and research.

4/24 \ Cognitive Psychology I 3 a.
- An introduction to contemporary psychological theories and research.

4/25 \ Cognitive Psychology II 3 a.
- Laboratory study of problem-solving, decision making, and perception. Students will also have had 3 a.b-a and 3 a.b-b for their majors in other departments.
32148 Human Judgment: Models and Applications 2 s.h.

Analysis of models and methods used in the study of human judgments and decisions, with applications in such areas as clinical diagnosis, social and educational evaluations, consumer and urban decisions.

32149 Development to Pattern Recognition 2 s.h.

Survey of recent experimental investigations of human pattern recognition; experiments relating to contemporary problems in memory, perception, and language. Dead and indirect referrals will be assessed.

32150 Statistical Analysis I 4 s.h.

Review of statistical concepts and techniques used in integrated investigations and experiments, planning and analyzing of single and factorial experiments involving completely randomized, randomized block, and factorial designs. Prerequisite: 31142 or equivalent and consent of instructor.

32151 Conformal Methods 3 s.h.

Prerequisites: 31143 and 32156, or equivalent. Same as PSY 325. 230. 137.

32152 Quantitative Methods in Psychology 3 s.h.

Mathematical methods necessary for understanding and use of numerical models in psychology; applications considered. Short review of statistics.

32153 Statistical Analysis II 4 s.h.

Continuation of 32152 to include planning and analysis of more complex investigations and multifactorial, single and multifactorial analysis of variance, and regression analysis, and survival. Prerequisites: 32152 or equivalent, and consent of instructor.

32156 Language Acquisitions 3 s.h.

Unguided theory and self-directed learning: abbreviating, sentence development, children's language and speech disorders, and facilitating or impairing language acquisition; acquisition of the use of language as a communicative skill. Same as 32154. 109.625.

32157 Psychology I 3 s.h.

Detailed consideration of the biological systems, including the neural, immune, and endocrine systems. Concepts of normal and abnormal states are introduced. Prerequisite: permission of instructor.

32159 Psychology I Appr 1 s.h.

Examination of current research in 32157 with more intensive consideration of recent research on selected topics such as addiction and depression. Emphasis on psychological research and interpretation of psychological techniques used in the assessment of deficits and deficits. Prerequisite: permission of instructor.

32160 Psychological Appr I 1 s.h.

Examination of basic topics in 32159 with more intensive consideration of recent research on selected topics such as addiction and depression. Emphasis on psychological research and interpretation of psychological techniques used in the assessment of deficits and deficits. Prerequisite: permission of instructor.

32161 Clinical Neuropsychology 3 s.h.

Consideration of the behavior of brain functions in many medical and behavioral disorders associated with dementia and strokes. Consideration of psychological test methods for identifying central states.

32162 Clinical Child Psychology 3 s.h.

Various assessment techniques and diagnostic schemes in evaluation of child neurodevelopmental and psychosocial disorders. Prerequisite knowledge of developmental psychology and psychological approaches to various developmental disorders.

32163 Theory and Techniques of Therapy 3 s.h.

Survey of major psychological techniques of child therapy; consideration of the use of therapy in various social and clinical contexts. Prerequisite: consent of instructor.

32166 Cognitive Therapy 3 s.h.

Survey of the major psychological techniques of cognitive therapy; consideration of the use of therapy in various social and clinical contexts. Prerequisite: consent of instructor.

32167 Cognitive Behavior Therapy 3 s.h.

Survey of the major psychological techniques of cognitive therapy; consideration of the use of therapy in various social and clinical contexts. Prerequisite: consent of instructor.

32168 Psychotherapy 3 s.h.

Same as 32154.

32169 Psychotherapy Laboratory 3 s.h.

Same as 3235.

32170 The Aphasic Disorders 3 s.h.

32171 Behavioral Therapy 3 s.h.

Learning or conditioning approaches to treatment of psychological disorders, including techniques of psychotherapy conditioning, operant conditioning, systematic desensitization, behavior therapy. Same as 32171.

32172 Psychopathology in Childhood 3 s.h.

Examination of psychological, social, and emotional development of children. Focus on issues of development and psychopathology in children and adolescence. Prerequisite: consent of instructor.

32173 Special and Family Therapy 3 s.h.

Therapeutic techniques for special populations, treatment of special needs of individuals with special needs. Prerequisite: consent of instructor.

32174 Advanced Techniques in the Interpersonal 1 s.h.

Same as 32154. 71,804. 81,804. 92. 804.

32175 Problems in Psychology 3 s.h.

Critical thinking and historical perspectives. Prerequisite: consent of instructor.

32178 Research Projects 3 s.h.

Directed research and independent study. Prerequisite: consent of instructor.

32179 Seminar: Personality 3 s.h.

Systematic review of selected topics. May be repeated. Prerequisite: consent of instructor.

32180 Seminar: Social Psychology 3 s.h.

Review of selected topics. May be repeated. Prerequisite: consent of instructor.

32181 Seminar: Social Research Methods and Current Literature in Social Psychology 3 s.h.

Emphasis on major social psychology research in the field of social psychology; in addition, students are encouraged to design their own research in a seminar forum. Enrollment limited to graduate students in social psychology, unless permission obtained in advanced from instructor.

32182 Seminar: Clinical Child Psychology 3 s.h.

Current topics in the field of clinical child psychology. Prerequisite: consent of instructor.

32183 Seminar: Developmental Processes 3 s.h.

Systematic review of selected topics.

32185 Seminar: Development of Vocabulary 3 s.h.

Selected topics pertaining to children's verbal behavior. Prerequisite: consent of instructor.

32186 Seminar: Language Development 3 s.h.

Trends in research on vocabulary development in children from low and middle classes. Development and the acquisition of language. Prerequisite: consent of instructor. Same as 32505. 105.283.

32187 Seminar: Social Development 3 s.h.

Trends in research on social development and behavior. Prerequisite: consent of instructor.

32188 Seminar: Problems in Developmental Psychology 3 s.h.

Consideration of selected methodological and hierarchical issues in developmental psychology. Prerequisite: consent of instructor.

32189 Seminar: Chemical Influences on Behavior 3 s.h.

Selected topics on the effects of the central nervous system and environmental influences on behavior. Prerequisite: consent of instructor.

32191 Seminar: Therapy Theory 3 s.h.

Selected topics on the effects of the central nervous system and environmental influences on behavior. Prerequisite: consent of instructor.

32192 Seminar: Memory 3 s.h.

Current theoretical viewpoints regarding nature of memory, including discussion of memory research findings which bear on these theories.

32193 Seminar: Epidemiology 3 s.h.

Theory, methods, and hypothesis testing in classical and modern research and in the analysis of data.

32196 Seminar: Law and Psychology 3 s.h.

Seminar in the field of psychology and law.

32197 Seminar: Psychological Empirical methods in research: traditional and modern candidate theses. Prerequisite: consent of instructor.

32198 Seminar: Methodological Models in Social Psychological Research 3 s.h.

Various psychological models of the human social world and their implications for social psychological research.

32199 Seminar: Statistical Analysis 3 s.h.

Advanced statistical methods, e.g., multivariate analysis, regression analysis, time series analysis, and design of experiments. Prerequisite: consent of instructor.

32199 Seminar: Real-Life Consumer Behavior 3 s.h.

Examination of the consumer's decision-making process and the development and use of consumer-oriented data collection.

32199 Seminar: Psychological Models 3 s.h.

Theories in social psychology, experimental psychology, and social psychology. Prerequisite: consent of instructor. Same as 225. 326. 328.

32199 Seminar: Psychological Models 3 s.h.

Examination of the consumer's decision-making process and the development and use of consumer-oriented data collection.

32199 Seminar: Psychological Models 3 s.h.

Theories in social psychology, experimental psychology, and social psychology. Prerequisite: consent of instructor. Same as 225. 326. 328.

32199 Seminar: Psychological Models 3 s.h.

Examination of the consumer's decision-making process and the development and use of consumer-oriented data collection.

32199 Seminar: Psychological Models 3 s.h.

Theories in social psychology, experimental psychology, and social psychology. Prerequisite: consent of instructor. Same as 225. 326. 328.
Recreation Education

Chair: Benjamin K. Huntcliff
Faculty: professor John A. Heidek, assistant professors Debe Lee Andrews, De Wayne Craig, Brian K. Huntcliff, Michael L. Ziegler

A professional cadre 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 10 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.

In addition to professional preparation, Recreation Education offers courses in leisure research, the history of the cultural views and attitudes toward free time, and the study of leisure as a contemporary social and cultural issue.

The Department is also involved with service to and consultation with numerous leisure delivery systems throughout Iowa and the nation.

In terms of the "broader mission" of the University, Recreation Education offers service courses designed to acquaint the general college student with the role of leisure in his or her own life and the relevance of a liberal education to areas of life outside of the work place.

The Bachelor of Science Degree

Course requirements for the major are:

Professional Core (33 a.h.)
104:50 Foundations of Recreation
104:81 Recreation Leadership
104:101 Leisure Research
104:105 Introduction to Therapeutic Recreation
104:106 Recreation Program
104:206 Administration of Recreation
104:168 Internship in Recreation
104:189 Internship in Recreation
275:56 First Aid

Area of Concentration (9-15 a.h.)

Community Recreation

For students preparing for positions in which they will be responsible for organizing and administering recreation programs, city, county and state agencies.

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.

Required Courses
104:120 Park and Recreation Facility Management
104:155 Assessing Leisure Services

Plus three courses selected with adviser.

Therapeutic Recreation

Therapeutic recreation focuses on preparing students to organize, plan and lead recreation programs in treatment and non-treatment settings for people who are ill, handicapped, aged, disabled and disadvantaged.

Required Courses
104:120 Orientation to Rehabilitation Settings
104:121 Orientation to Special Populations
104:123 Role of Therapeutic Recreation in Rehabilitation

Plus three courses selected with adviser.

Leisure Studies

For students preparing for graduate work or with a major interest in leisure research or leisure at a contemporary social issue, or with an interest in diverse fields of recreation, such as outdoor, industrial recreation, etc. It is the most flexible of all preparations, and makes the maximum use of courses outside of the recreation education program. It is also ideal for students wishing to obtain a minor in Recreation Education.

Required Courses
104:140 Principles of Outdoor Recreation
104:145 Readings in Leisure
104:146 Contemporary Issues in Recreation and Leisure

Plus two courses selected with adviser.

Internship Opportunities

The recreation education program places special emphasis on practical experience and student involvement with the profession.
and practices. Students are encouraged to attend guest and national professional conferences, and complete all professional core courses. This emphasis includes lecture by working professionals, as well as opportunities for field experience related to course content.

The practical emphasis is outlined by a professional seminar in an agency and setting of the student's selection. The emphasis is designed to lead to professional placement. More than 50 department, agencies and services throughout the state provide fieldwork 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 work attempted in the program.

To graduate with honors in recreation education, the student must successfully complete six semester hours of honors work and must pass an honors examination. With the permission of the chair 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 master's program is designed to prepare students for administrative, supervisory, and teaching positions in recreation systems and universals. It offers two areas of specialization: community recreation administration and therapeutic recreation administration. It may be taken with thesis (33 s.h.) or without (36 s.h.). An introduction to advisory activities and research is provided through 104-101 Leisure Research, or equivalent, and preparation of a thesis or research report. The research will result in a modest contribution to knowledge, a review of a report or a synthesis, a design in the park and recreation field.

Community Recreation Administration
Emphasis in this area relates to the development and administration of programs in various settings, such as municipal departments, schools, voluntary agencies, churches, the armed forces, state and federal agencies, industry, private organizations, etc. The emphasis within these programs may be on special population groups, such as the inner city and poverty groups, the aged, children and youth, or upon the swelling of leisure as a social phenomenon with study directed toward historical, philosophical, and social bases of leisure. Public administration and urban social planning are particular aspects of this area. To provide the emphasis, the program follows closely from other disciplines, such as public administration, social work, urban and regional planning, sociology, geography, and psychology.

Therapeutic Recreation Administration
Therapeutic recreation relates to the development and administration of programs serving the mentally retarded, physically disabled, emotionally disturbed and aging in both institutional and community settings. The program is directed toward the constructive understanding of recreation's role in a comprehensive rehabilitation program, including both clinical and community facets and thus prepare the student to work with a broad range of disability areas in either a medical setting or the community. Through the use of related area courses, strengths in specific disability areas may be developed.

It is recommended that the person have as an undergraduate background 10-12 semester hours of credit in courses such as abnormal psychology, psychology of adjustment, sociology, the mentally retarded, and aging. The student should also have skills in at least two program fields.

Financial Aids
Assistance is available in the form of graduate assistantships, research assistant- ship, teaching assistantships, and post- nontenure assistantships for doctoral candidates. This assistance is made available through the department, as well as through a special program in Therapeutic Recreation Services for Handicapped Children.

Facilities
Students majoring in recreation education have the opportunity to gain extensive experience in various independent research in these and other locations: University of Iowa Psychiatric Hospital and Hospital School, University Recreation Services, Iowa City Parks and Recreation Department, Systems Unlimited, various retirement and convalescence homes, and Coralville Parks and Recreation Department.

Courses

Primary for Undergraduates

104-200 Fundamentals of Recreation 1-2 s.h.
Basis philosophy, scope, ethical, social and legal developments in leisure and recreation. Fundamentals of organizational recreation and service organizations and agencies concerned with recreation.

104-211 Student Leadership 3 s.h.
Leadership principles, practices, and program evaluation and leadership in small and large groups. ACR certification program.

104-230 Strategy for Recreation Aide Development 3 s.h.
Institutional and community recreation programs employing recreation aides, physically handicapped, emotionally disturbed and aged.

For Undergraduates and Graduates

104-101 Leisure Research 3 s.h.

104-125 Introduction to Therapeutic Recreation 3 s.h.

104-126 Introduction to Community Recreation 3 s.h.

104-130 Professional Development 3 s.h.
Planning and evaluation of recreation program, organization, operation, utilization of resources, evaluation of facilities and leadership.
Honors Program

Religion majors eligible for the Liberal Arts Honors Program may obtain a degree with Honors through satisfactory completion of an Honors essay during the senior year.

Graduate Programs

The School of Religion seeks to prepare a select and limited number of graduate students to become specialists in the study and teaching of religion. Graduate study is offered in five areas, including 13 fields: Jewish and Christian Scripture, Old Testament, New Testament, Post-Biblical Judaism, History of Christianity: Early (to 1500), Modern (since 1500), American, 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 1050 on the GRE Aptitude Test and a GPA of 3.0 are ordinarily required for admission to the Master of Arts program.

The formal course requirement for the M.A. is 60 semester hours. Six semester hours of previously completed graduate study may be transferred toward the 30, with the approval of the student's advisory committee.

The student must demonstrate a reading knowledge of French or German, or of another foreign language which is related to his or her field of study and is approved by his or her advisory committee.

A thesis is also required. It need not be formally defended except when the student's advisory committee considers it desirable.

Four hours of credit for thesis research may be applied toward the 30-hour requirement.

M.A. candidates should obtain more detailed information from the director of the School.

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 investigation of human experience. The University hospitals provide the clinical settings for research and training in this program.

The program requires 30 semester hours of coursework. Four may be earned in thesis research. Six may be from another accredited graduate or professional school.

The program includes required courses in religion and personality, and in related fields of study and religions in America, together with other relevant courses. Knowledge of a foreign language, statistics, or another research tool may be required, at the discretion of the student's advisory committee. In addition to the general requirements for admission to the Graduate College, the School generally requires an on-campus interview of applicants to this program; however, the interview may be conducted off campus by an accredited member of the Association for Clinical Pastoral Education.

Doctor of Philosophy

A score of 1100 on the GRE Aptitude Test and a GPA of 3.0 are ordinarily required for admission to the Ph.D. program.

The student may elect one or two options for doctoral study. In the first option, in consultation with the student's faculty, the student develops a broad program which will give him or her a knowledge of three of the five areas in which the School offers graduate study.

Major written qualifying examinations, covering coursework and reading in each of the three selected areas, provide an initial determination of the student's progress toward the ultimate objectives of the doctoral program. Students who hold the Master of Arts degree in religion, or the Bachelor of Divinity or an equivalent degree, must take the qualifying examinations within two years after beginning the doctoral program. Other students must take them within three years after beginning the program.

Generally, students must pass the Graduate School Foreign Language Tests in French or German before being 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.

No later than two months after passing all three qualifying examinations, the student and supervisor must establish a three-member committee for comprehensive examinations. The committee will determine three subjects for the comprehensive examinations, including one subject closely related to the student's dissertation topic.

The plan of study for the comprehensive examinations must include ten or more semester hours of coursework at the 500-level or above outside the School of Religion with grades of "A" or "B." An additional semester 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 (including that student possesses the aptitude required for doctoral-level work in that area of major interest. The student must pass an oral examination on the dissertation. No more than 30 hours of credit will be allowed for the dissertation.

A student whose grade-point average in graduate study at the University falls below 3.0 will be placed on probation. A student who does not bring the average up to 3.0 within one semester of probation will be disqualified from further graduate study in the School of Religion.

A student choosing the second option pursues one of five separate programs: Judaism and Christianity in the Hellenistic World, History of Theology and Religion in the West, Contemporary Theology and Religious Thought, South Asia, South East Asia, and Other Academic Disciplines, History of Asian Religions.
The student may apply for admission to this program before or after enrolling for graduate study.

The student is expected to have passed the language requirements 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 extending each semester up to the seminar of the comprehensive examinations, the student must submit to the faculty in his or her program a copy of the paper best representing his or her work that semester.

Depending on the student's program, the comprehensive examinations will cover three or four fields. One field will be directly pertinent to the student's dissertation subject.

Within three months after passing the comprehensive examinations, the student must submit a dissertation prospectus to his or her adviser. The advisor will then assemble a dissertation committee to discuss the prospectus and guide the dissertation work.

A student who fails all of the comprehensive examinations may, with faculty approval, complete a thesis for a terminal Master of Arts degree.

Detailed Information about any of the programs may be obtained from the director of the School.

Special Facilities

The University Hospitals and Clinics provide clinical opportunities for students 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: a teaching-research fellowship (TRF), teaching assistantships (TA); and research assistantships (RA).

The TRF is awarded on the basis of proven academic excellence to an entering student who has not previously attended The University of Iowa. It provides support, including in-lab fees, for four years for a student holding an M.A. or M.Div., or three years for a student holding an M.A. or M.Div. If TA, either 1/4- or 1/2-time, are awarded to students on the basis of superior academic performance, ordinarily, first-year students are not eligible. They are limited to one academic year, and are evaluated and renewed annually. Students holding TAs work primarily in the undergraduate core courses.

Students holding TAs are assigned to a particular professor to assist him or her with research projects. TAs are also awarded on a yearly basis, to enrolling and to current students, 1/4- or 1/2-time, and renewed annually.

Courses

Primary for Undergraduates

32:1 Old Testament Survey

3.0 h.

32:2 Old Testament Survey

3.0 h.

I Kings through II Chronicles

3.0 h.

New Testament Survey

3.0 h.

Literature of New Testament in its historical setting.

3:31 Introduction to Catholicism

3.0 h.

Principles teachings of the Catholic faith; historical and moral discernments and practices of the Catholic Church; developments since Vatican II.

3:36 Religion in international affairs

4.0 h.

For undergraduate major majors. Cannot be counted for both major and core course requirements. Same as 3:13.

3:36 Religion in Human Culture

4.0 h.

Combinability of 33:60. Same as 11:36.

3:45 Living Religions of the West

3.0 h.

Religion thought and practice in the Mediterranean area, Western Asia, North Africa, Europe, and Americas.

3:46 Living Religions of the East

3.0 h.

Religion thought and practice of peoples of India, China, and Japan. Can be taken for core course credit or as an elective. Same as 11:46, 33:46.

3:51 Varieties of Modern Experience

3.0 h.

Examination of the writings of representative Western authors, together with philosophical and psychological interpretations of their experience; urban liberal arts lecture seminar.

3:72 Religions in American History

3.0 h.

Protestant, Catholic, and Jew from the Colonial Era to the present. Same as 10:72.

3:79 Theology of Lifestyle

2.0 h.

A study of the interaction between several liberation movements and religions, and the resulting change in the understanding of the role and function of religion.

2:08 Religions and the Coast for Peace

2.0 h.

Aid to war and violence, and awareness for peace in selected religious traditions.

3:20 Jews and Judaism

3.0 h.

The history of the Jews and their system of belief from the biblical beginning to the present day.

For Undergraduates and Graduates

3:20 God and Man in the Hebrew Bible

2.0-3.0 h.

God and man; God and nature; creation; sin and redemption in the Hebrew Bible.

3:20 Biblical Archaeology

3.0 h.

Contribution of synoptic archaeological research in understanding historical and cultural backgrounds of biblical events.

3:20 Introduction to Rabbinic Literature

3.0 h.

3:20 Jewish Mysticism

3.0 h.

3:20 Mediterranean Jewish Philosophy

3.0 h.

May be offered as a survey of Jewish philosophy or as a study of one specific philosophy.

3:20 Introduction to the interdisciplinary study of Judaism

3.0 h.

History and theology of Judaism from 2000 B.C.E. to 1500 C.E.; readings from English translations of sources; interdisciplinary themes.

3:20 The Specific Gospel

3.0 h.

Interpretation of one of the four Gospels, with reference to the other three.

3:20 Paul

3.0 h.

3:20 Pauline Theology in historical context.

3:20 Christian Ethics

2.0-3.0 h.

Specific issues in Christian ethics and survey of leading ethical themes according to directives and dynamics of Christian sources.

3:20 History of Christian Ethics

2.0-3.0 h.

History of Christian moral and ethical thought, leading to development from Old and New Testament to present.

3:20 Purchases of Christian Ethics

2.0-3.0 h.

Main themes viewed by Christian faith, application to problems of marriage, love, economics, politics, race relations, sex, and deadly.

3:11 Biblical Hebrew I

2.0-3.0 h.

Three hour prerequisite: Intro. to Hebrew on course level. Special topics on ancient Near E.

3:12 Biblical Hebrew II

2.0-3.0 h.

Prerequisite: 3:11.

3:13 Readings in the Hebrew Bible

2.0-3.0 h.

3:13 Readings in the Hebrew Bible

2.0-3.0 h.

3:13 Readings in the Hebrew Bible

2.0-3.0 h.

3:13 Readings in the Hebrew Bible

2.0-3.0 h.

3:12 Biblical Aramaic

2.0-3.0 h.

Survey of several grammatical, reading, and literary purposes of the Aramaic text and selected related materials.

3:13 The World of the Old Testament

3.0 h.

Historical and cultural background of Old Testament.

3:20 Biblical and Theological Thought

3.0 h.

A study of the interaction between several liberation movements and religions, and the resulting change in the understanding of the role and function of religion.

3:20 Jewish and Islamic in the Hebrew Bible

3.0 h.

The theology of the Old Testament and the origins of the Old Testament.

3:17 Biblical Literature and Thought

3.0 h.

Ukray analysis and interpretation of selected biblical texts from the historical-critical, interpretative, contemporary and cultural.

3:15 Reading in Rabbinic Literature

2.0-3.0 h.

Reading and interpretation of two or three sessions.

3:20 Jewish and Islamic in the Hebrew Bible

3.0 h.

The history of the Jews and their system of belief from the biblical beginning to the present day.

3:20 God and Man in the Hebrew Bible

2.0-3.0 h.

God and man; God and nature; creation; sin and redemption in the Hebrew Bible.

3:20 Biblical Archaeology

3.0 h.

Contribution of synoptic archaeological research in understanding historical and cultural backgrounds of biblical events.

3:20 Introduction to Rabbinic Literature

3.0 h.

3:20 Jewish Mysticism

3.0 h.

3:20 Mediterranean Jewish Philosophy

3.0 h.

May be offered as a survey of Jewish philosophy or as a study of one specific philosophy.

3:20 Introduction to the interdisciplinary study of Judaism

3.0 h.

History and theology of Judaism from 2000 B.C.E. to 1500 C.E.; readings from English translations of sources; interdisciplinary themes.

3:20 The Specific Gospel

3.0 h.

Interpretation of one of the four Gospels, with reference to the other three.

3:20 Paul

3.0 h.

3:20 Pauline Theology in historical context.

3:20 Christian Ethics

2.0-3.0 h.

Specific issues in Christian ethics and survey of leading ethical themes according to directives and dynamics of Christian sources.

3:20 History of Christian Ethics

2.0-3.0 h.

History of Christian moral and ethical thought, leading to development from Old and New Testament to present.

3:20 Purchases of Christian Ethics

2.0-3.0 h.

Main themes viewed by Christian faith, application to problems of marriage, love, economics, politics, race relations, sex, and deadly.

3:11 Biblical Hebrew I

2.0-3.0 h.

Three hour prerequisite: Intro. to Hebrew on course level. Special topics on ancient Near E.

3:12 Biblical Hebrew II

2.0-3.0 h.

Prerequisite: 3:11.

3:13 Readings in the Hebrew Bible

2.0-3.0 h.

3:13 Readings in the Hebrew Bible

2.0-3.0 h.

3:13 Readings in the Hebrew Bible

2.0-3.0 h.

3:13 Readings in the Hebrew Bible

2.0-3.0 h.

3:12 Biblical Aramaic

2.0-3.0 h.

Survey of several grammatical, reading, and literary purposes of the Aramaic text and selected related materials.

3:13 The World of the Old Testament

3.0 h.

Historical and cultural background of Old Testament.

3:20 Biblical and Theological Thought

3.0 h.

A study of the interaction between several liberation movements and religions, and the resulting change in the understanding of the role and function of religion.

3:20 Jewish and Islamic in the Hebrew Bible

3.0 h.

The theology of the Old Testament and the origins of the Old Testament.

3:17 Biblical Literature and Thought

3.0 h.

Ukray analysis and interpretation of selected biblical texts from the historical-critical, interpretative, contemporary and cultural.
32:18 History of Christian Thought I
32:18a History of Christian Thought I: Early Church 3-29 a.h.
32:18b History of Christian Thought I: Medieval Church 3-29 a.h.
32:18c History of Christian Thought I: Modern Church 3-29 a.h.
32:19 History of Christian Thought II
32:19a History of Christian Thought II: Early Church 3-29 a.h.
32:19b History of Christian Thought II: Medieval Church 3-29 a.h.
32:19c History of Christian Thought II: Modern Church 3-29 a.h.
32:20 History of Christian Thought III
32:20a History of Christian Thought III: Early Church 3-29 a.h.
32:20b History of Christian Thought III: Medieval Church 3-29 a.h.
32:20c History of Christian Thought III: Modern Church 3-29 a.h.
32:21 History of Religion
32:21a History of Religion: General Survey 3-29 a.h.
32:21b History of Religion: Major Traditions 3-29 a.h.
32:21c History of Religion: Comparative Analysis 3-29 a.h.
32:22 History of Religion and Society
32:22a History of Religion and Society: General Survey 3-29 a.h.
32:22b History of Religion and Society: Major Traditions 3-29 a.h.
32:22c History of Religion and Society: Comparative Analysis 3-29 a.h.
32:23 History of the World's Religions
32:23a History of the World's Religions: General Survey 3-29 a.h.
32:23b History of the World's Religions: Major Traditions 3-29 a.h.
32:23c History of the World's Religions: Comparative Analysis 3-29 a.h.
32:24 History of the World's Religions and Cultures
32:24a History of the World's Religions and Cultures: General Survey 3-29 a.h.
32:24b History of the World's Religions and Cultures: Major Traditions 3-29 a.h.
32:24c History of the World's Religions and Cultures: Comparative Analysis 3-29 a.h.
32:25 History of the World's Religions and Cultures and Their Impact
32:25a History of the World's Religions and Cultures and Their Impact: General Survey 3-29 a.h.
32:25b History of the World's Religions and Cultures and Their Impact: Major Traditions 3-29 a.h.
32:25c History of the World's Religions and Cultures and Their Impact: Comparative Analysis 3-29 a.h.
32:26 History of the World's Religions and Cultures and Their Impact and Influence
32:26a History of the World's Religions and Cultures and Their Impact and Influence: General Survey 3-29 a.h.
32:26b History of the World's Religions and Cultures and Their Impact and Influence: Major Traditions 3-29 a.h.
32:26c History of the World's Religions and Cultures and Their Impact and Influence: Comparative Analysis 3-29 a.h.
32:27 History of the World's Religions and Cultures and Their Impact and Influence and Their Influence on Modern Society
32:27b History of the World's Religions and Cultures and Their Impact and Influence on Modern Society: Major Traditions 3-29 a.h.
32:27c History of the World's Religions and Cultures and Their Impact and Influence on Modern Society: Comparative Analysis 3-29 a.h.
32:28 History of the World's Religions and Cultures and Their Impact and Influence and Their Influence on Modern Society and Their Influence on Modern Society and Their Influence on Modern Society and Their Influence on Modern Society
32:28a History of the World's Religions and Cultures and Their Impact and Influence and Their Influence on Modern Society: General Survey 3-29 a.h.
32:28b History of the World's Religions and Cultures and Their Impact and Influence and Their Influence on Modern Society: Major Traditions 3-29 a.h.
32:28c History of the World's Religions and Cultures and Their Impact and Influence and Their Influence on Modern Society: Comparative Analysis 3-29 a.h.
32:29 History of the World's Religions and Cultures and Their Impact and Influence and Their Influence on Modern Society and Their Influence on Modern Society and Their Influence on Modern Society and Their Influence on Modern Society
32:29b History of the World's Religions and Cultures and Their Impact and Influence and Their Influence on Modern Society and Their Influence on Modern Society and Their Influence on Modern Society: Major Traditions 3-29 a.h.
32:29c History of the World's Religions and Cultures and Their Impact and Influence and Their Influence on Modern Society and Their Influence on Modern Society and Their Influence on Modern Society: Comparative Analysis 3-29 a.h.
32:30 History of the World's Religions and Cultures and Their Impact and Influence and Their Influence on Modern Society and Their Influence on Modern Society and Their Influence on Modern Society and Their Influence on Modern Society
32:30a History of the World's Religions and Cultures and Their Impact and Influence and Their Influence on Modern Society and Their Influence on Modern Society and Their Influence on Modern Society and Their Influence on Modern Society: General Survey 3-29 a.h.
32:30b History of the World's Religions and Cultures and Their Impact and Influence and Their Influence on Modern Society and Their Influence on Modern Society and Their Influence on Modern Society and Their Influence on Modern Society: Major Traditions 3-29 a.h.
32:30c History of the World's Religions and Cultures and Their Impact and Influence and Their Influence on Modern Society and Their Influence on Modern Society and Their Influence on Modern Society and Their Influence on Modern Society: Comparative Analysis 3-29 a.h.
Bachelor of Arts Program

Students who major in Russian must meet the general requirements for a degree in Liberal Arts and earn at least 28 semester hours of credit in advanced Russian courses:

- 41.111-112 Intermediate Composition and Conversation (6 s.h.)
- 41.113 Advanced Composition and Conversation (3 s.h.)
- 41.171-172 Readings in Representative Russian Literature (6 s.h.)
- Three of the following:
  - 41.151 Russian Literature in Translation (1800-1880) (3 s.h.)
  - 41.152 Russian Literature in Translation (1880-1917) (3 s.h.)
  - 41.181 Soviet Literature in Translation (3 s.h.)
  - 41.186 Russian Culture (3 s.h.)
  - 41.181 Russian Civilization (2 s.h.)

For a more complete area background, Russian majors are urged to include related courses in economics, geography, history or political science among their elective courses.

All students majoring in Russian are strongly encouraged to enroll in the one-semester course 41.127 Phonetics and Prosody. Instruction in business Russian may be arranged with the consent of the instructor by enrolling in 41.168 Special Readings.

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 constitute each work unit of two semester hours. Students may take up to eight semester hours of Honors in Russian.

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 Loyola State University under the auspices of the Council on International Educational Exchange. 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 Department office.

Master of Arts Program

The graduate program in Russian offers a major emphasis in either literary or language study.

The focus in literary studies is on the development of Russian literature, both as a national phenomenon and as a reflection of European culture. Students are expected to analyze writer's styles, parodic literary techniques, recognize literary influences, and develop the ability for sound criticism of form, content, and language of works in all genres.

Students electing an emphasis on language studies focus on the historical development of Russian. In addition to advanced study of contemporary phonology, morphology, syntax and stylistics, 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. The program consists of courses and above those which constitute an undergraduate major in Russian and should include course work in related fields such as comparative literature, history, philosophy and other languages. Four to eight semester hours may be received for thesis completion. The candidates must pass a written and an oral examination; they must also demonstrate a reading knowledge of either French or German.

Financial Aid

Aid is available to graduate students in the form of fellowship scholarships, University fellowships, and teaching and research assistantships. It is awarded annually on a
Courses

For Undergraduates and Graduates

41:101 Elementary Russian 4 s.h.
Prerequisites: 11:301 or equivalent.

41:102 Russian for Reading 3 s.h.
Emphasis on reading authentic and technical Russian material; for students, especially those requiring in
advance, who may not be able to develop reading ability for research purposes.

41:106 Second-Year Russian 4 s.h.
Standard second-year course recommended for students reaching their foreign language requirement for S.A.
degree and desiring further training in some use of the
language. Prerequisite: 41:102 or equivalent.

41:108 Second-Year Russian Prerequisite: 41:106 or equivalent.

41:109 Special Readings arr.
Prerequisite: 16 semester hours of language instruction.

41:110 Intermediate Conversation 3 s.h.
Prerequisite: 41:106 or equivalent.

41:111 Intermediate Conversation 3 s.h.
Prerequisite: 41:106 or equivalent.

41:112 Intermediate Composition and
Grammar 3 s.h.
Prerequisite: 41:111 or equivalent.

41:113 Advanced Conversation 3 s.h.
Prerequisite: 41:112 or equivalent.

41:114 Advanced Composition and
Grammar 3 s.h.
Prerequisite: 41:113 or equivalent.

41:127 Pronunciation and Presentation 3 s.h.
Prerequisite: 41:110 or equivalent.

41:161 Russian Literature in Translation 3 s.h.
41:175 Russian Literature in Translation 3 s.h.
Prerequisite: 41:161 or equivalent.

41:176 Russia Today and Yesterday 3 s.h.
Prerequisite: 41:161 or equivalent.

41:177 Readings in Russian Literature 3 s.h.
Prerequisite: 41:110 or equivalent.

41:178 Russian Civilization Conducted in English.
3 s.h.

41:180 Russian Culture Conducted in English.
3 s.h.

Primarily for Graduates

41:201 Russian Literature to 1800 3 s.h.

41:202 Structures of Russian I 3 s.h.

41:204 Structures of Russian II 3 s.h.
Prerequisite: 41:202 or may be taken as independent unit.

41:205 Russian Syntax 3 s.h.

41:206 Russian Syntax 3 s.h.

41:211 18th-Century Russian Literature 3 s.h.

41:212 Modern Russian Literature 1890-1917 3 s.h.
Prerequisite: 41:211 or 41:212 or may be taken as independent unit.

41:215 Russian Poetry 3 s.h.

41:221 Russian Literature 3 s.h.

41:244 Literary Criticism 3 s.h.

41:256 Problems in Soviet Lit Theory and
Criticism 3 s.h.

41:290 Russian Research Methods 3 s.h.

41:291 History of the Russian Language 3 s.h.

41:293 DliChurch Slavic 3 s.h.

41:297 Independent Research 3 s.h.

Science Education

Head: Robert E. Yarger

Graduate programs: M.A., M.S., Ed.D., Ph.D.

Undergraduate Program

The undergraduate program in Science Education provides a major for students who are preparing to teach in secondary schools, for students who need an interdisciplinary science background for other professional programs, as well as for students interested in a variety of science disciplines. The program provides some depth of preparation while encouraging breadth of experience—a combination attractive for preparation for secondary school teaching, some profes-

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 radion, tape recorders, record players, and a recording room and drill control. An"achromatic, " doubt-proof work
room and a library of tape and disc recordings are also available.

LIBERAL ARTS/Science Education 185
sional schools, medicine, physical therapy, and certain specialized and interdisciplinary graduate areas. The program in elementary education with a concentration in science is recommended for elementary majors with interest in science as a primary field.

Graduate Programs

Certification Only

This is a special classification for graduate students who have earned teacher's degrees without fulfilling requirements for a teaching certificate. The requirements include fulfilling all science, history and philosophy of science requirements for graduation from the teacher education program in science at The University of Iowa. In addition, the normal sequence of education courses results in 20 to 28 additional hours of credit. No degree objective is implied, although it is possible to request a change in graduate status. In such instances, the normal processing and faculty review would occur before any changes could be made.

M.A.T. in Science Teaching

This degree is designed primarily for persons who wish to become teachers after they have completed a bachelor's degree. It features advanced work in science along with the courses required for certification. It is a means by which students can attain a master's degree with certification at the same time. (Other Science Education degree programs assume that the candidate has already completed a certification program.)

M.S. without Thesis

This degree is the one most appropriate for teachers who plan to remain in the day-work. It is not a research degree and is not recommended for candidates who plan to continue their education beyond the master's level. It is a 38-hour program requiring 26 hours in the sciences (further preparation in the content fields where the teacher is assigned) and 12 semester hours of advanced work in science education.

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 is 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.

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 co-author the thesis work. The program includes 30 semester hours, of which 10 hours must be completed in science education and 20 hours in two fields of science.

M.S. for Science Supervisors

Since the needs of supervisors of science are 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, which must be of practical results, usually center upon very practical curriculum problems. The special M.S. degree will meet all the qualifications of the regular M.S. degrees. However, there 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 endorsement 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 a further degree objective. Students so classified must be formally accepted as

P.I. students and must meet regularly with an adviser. 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 decide to apply for a degree at a later time, no credit completed while admitted for P.I. must be evaluated and the application is reviewed as if it is a new one for admission purposes.

Educational Specialist Degree

The E.S.D. is an intermediate degree between the master's and the Ph.D. degrees. It is recommended for supervisors (state, regional or local) as well as for instructors in community colleges and/or small four-year liberal arts colleges. The degree consists of 30 semester hours of work beyond the bachelor's degree, of which 28 semester hours are in supportive science, 10 semester hours in related fields and 22 semester hours in science education (including research and internship credit).

Doctor of Philosophy

This degree is available to qualified candidates who aspire to college and university positions as science educators. Major supervisory posts in national, state and local systems; positions as teachers of the advanced class and/or advanced classes; Ph.D.'s as instructors of general education science courses at major colleges; positions as research directors in science education, and coordinators of allied health and engineering education programs. Two-thirds of the work is in two areas of science, with one-third centered in education.

The Ph.D. candidate in science education is expected to complete two tools of research before taking comprehensive examinations. These can be satisfied before degree candidacy or during the final registrations for coursework which is more directly a part of degree requirements. The tools of research may be fulfilled by the candidate in science education by establishing competency in two of the following:

Statistics (six semester hours of graduate work);
Computer programming and/or data processing;
Research design in science education (completing of pilot study); and
Comparative Study of French, German or Russian.

The program advisor is charged with certifying competency in the two tool areas.

Special Programs
A philosophy and history of science program as it relates to scientific literacy and science teaching is a special facet of the Science Education program at Iowa. The extensive program for motivated and high-ability secondary school students is another unique feature.

The foundations of science program is a course sequence providing science courses for nonmajors. It involves 500 students per year. Unique elementary and secondary education programs are sponsored by the science education programs with the College of Liberal Arts and the College of Education.

Iowa-UPSTEP is a federally-funded program developed and operating at the University. Some of the unique features of Iowa-UPSTEP model include: a professional sequence for undergraduates closely linked to the science major and general education requirements; a philosophy and history of science component; a program that is largely field-based; early identification of pre-operational-3rd year through a Secondary Student Training Program (SSTP) experience; and an interdisciplinary component designed to meet curriculum revision in Iowa schools.

Iowa-ASSIST is a special program in science education which involves 800 in-service teachers each year in special curriculum revision and implementation efforts. Summer and a regular year workshops provide the basic modes of operation for the program. Associated with Iowa-ASSIST is a materials center which provides printed and laboratory materials for workshops and school program implementations.

Special Facilities
The physical facilities for science education programs at The University of Iowa are exemplary. The Science Education Center is located in the new Physics Building near the center of the campus. The Science Education Center consists of the seventh, fourth and part of the third floor of the east wing (the instructional laboratories) of the Physics Building.

The main office of the Science Education Center is located on the fourth floor. Other general facilities on the third floor include a photographic laboratory, a departmental conference room and a library and counseling center. A suite of offices for the student activity programs is also located here. Also included is space for the elementary school focus of the program. Instructional space includes a methods laboratory for the elementary school science methods courses and two large teaching laboratories for the foundations of science sequence.

Facilities on the third floor include an interactive curriculum坊 and secondary methods laboratory, a curriculum and materials center, and an office for coordinating Iowa-ASSIST, a model in-service program for teaching schools with implementing new national curriculum programs in Iowa schools. A Resource Center, including both living and expendable materials, is also located here.

The seventh floor includes central offices for the history and philosophy of science focus of the science education program at Iowa and for the secondary school teacher education program. A self-instructional laboratory including laboratory and audio-visual materials is located here. There is also a large seminar room used as an instructional center for the secondary teacher education sessions, including many focus of the Iowa-UPSTEP model. The seventh floor also includes multiple offices for graduate assistants, a common area for small-group discussions and individual work, and two large areas for small-group and committee work.

Financial Aid
Ten teaching assistantships are available, usually for Ph.D. candidates. Five research assistantships are also available for qualified graduate students. At least ten administrative and service assistantships are also available for qualified graduate students.

Courses

<table>
<thead>
<tr>
<th>Primarily for Undergraduates</th>
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<tbody>
<tr>
<td>57-20 Investigations in Science</td>
</tr>
<tr>
<td>Special projects in science for high-ability secondary school students. May be repeated up to 6 credits.</td>
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<tr>
<td>57-45 Science Survey</td>
</tr>
<tr>
<td>Emphasis on broad understanding of science. Attention to recent and modern topics in the field.</td>
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<tr>
<td>57-46 Science Survey</td>
</tr>
<tr>
<td>Experiences in laboratories where science and technology are examined. Individual projects may substitute for courses. Attention to recent topics in the University's science program.</td>
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<tr>
<td>57-50 Science Foundations I</td>
</tr>
<tr>
<td>Study of selected concepts in the basic science areas. Emphasis on self-directed laboratory investigations.</td>
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<tr>
<td>Science core requirement for elementary education and special education majors.</td>
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<tr>
<td>57-56 Science Foundations II</td>
</tr>
<tr>
<td>Continuation of 57-50; includes additional investigations of selected concepts in the basic sciences. Science core requirement for elementary education and special education majors.</td>
</tr>
<tr>
<td>57-91 Research Project</td>
</tr>
</tbody>
</table>

For Undergraduates and Graduates

| 57-107 Science and Educational Applications of Earth Science Concepts and Topics | ar. |
| Brief systematic review of contemporary geologic emphasis on laboratory and field work dealing with rocks, soils, fossils, maps and the environment. |
| 57-109 Biological Concepts | ar. |
| Introduction to life science for teachers with laboratory training in both sciences. |
| 57-110 Biological and Educational Applications of Biological Concepts | ar. |
| Major role of molecular biology, cellular constitution and development in the educational program. |

Science Foundations III: ar. |
| 57-110 Earth and Physical Concepts | ar. |
| Continuation of 57-107 and 57-109. Focus on the science core requirement for elementary education and special education majors. |
| 57-115 Social and Educational Applications of Chemical Concepts | ar. |
| Emphasis on selected concepts in the field. |
| 57-116 Concepts of Modern Physics | ar. |
| Emphasis on selected concepts in the field. |
| 57-120 Science and Educational Applications of Electrical Concepts | ar. |
| Emphasis on selected concepts in the field. |
| 57-121 Selected Science and Education Topics | ar. |
| Selected topics with special reference to applicability to teaching. |

57-123 Advanced Science Foundations | 3-4-4.3. |
| Continuation of 57-50 and 57-56; emphasis on independent study and investigation in advanced topics. |
| 57-125 and 57-126 are a supplement of 8 |
| Credits of science. |
Undergraduate Program

The major in social studies education is a broad, interdisciplinary nonprofessional major. It provides an excellent foundation for careers in law, social work, religion, urban planning and development, and government service at all levels. Its major purpose, however, is to provide a broad, comprehensive education for students preparing to teach in secondary schools. Together with the professional requirements for certification, this major meets the standards established by the North Central Association of Colleges and Secondary Schools. There is a good deal of flexibility in the program and, in consultation with an advisor, it can be tailored to the needs and interests of the individual student. All of the coursework is taken within the seven cooperating departments. The B.A. in social studies consists of a total of 80 semester hours, including: 12 semester hours in history; 12 semester hours each in economics, political science, and sociology; a minimum of three semester hours in geography; and nine semester hours in anthropology or psychology. Students pursuing a social studies education major will be engaged in survey courses introducing them to the various social sciences. But many of the departments offer independent study and readings as alternatives to formal classes. There is no separate Honors Program in social studies education. Students who qualify are encouraged to do their Honors work in the social science department in which they wish to concentrate their work.

Admission Requirements

Students wishing to major in social studies education must have the permission of an adviser. Transfer students must have earned a minimum grade-point average of 2.5 on all work done in the subject of the seven cooperating departments up to the time of admission in order to be admitted to the program. Approval of candidacy for the bachelor's degree will be granted only to students who have a 2.5 grade-point average in all college work undertaken in the cooperating departments.

Master of Arts

The interdisciplinary nature of the Master of Arts degree in social studies education is of special interest to classroom teachers in secondary education, to instructors in junior and community colleges, and to educators wishing to concentrate in social studies curriculum and instruction. Graduates of this program are classroom teachers and chairs of social studies departments in junior and senior high schools. Some are serving as curriculum consultants for school districts, while others are staff members in community colleges. A few have found the degree excellent preparation for their professional work in various correctional and penal institutions. For a small number, the master's program has provided access to civil service positions at various levels of government. In the master's program, the candidate may elect to take the degree with or without thesis. Both plans require a minimum of 36 semester hours, distributed in one of two ways.

In Plan A, the candidate completes at least 10 semester hours of coursework in each of three of the seven cooperating departments: Anthropology, Economics, Geography, History, Political Science, Psychology, and Sociology. The remaining eight semester hours may be taken in one of the three departments, or distributed among them.

In Plan B, the candidate does his or her work in two of the cooperating departments and in the College of Education. Under this plan, the student takes a minimum of 10 semester hours in each of the two social sciences he or she has chosen, and a maximum of 10 semester hours in education. The remaining eight semester hours may be taken in one of the social science fields or be distributed between them.

Both plans require a minimum of nine semester hours in graduate courses numbered 5000 or above. One such course must be taken in each of the three fields included in the program. Comprehensive examinations are required. The written portion consists of a six-hour examination over the fields in which the candidate has distributed his or her work. The oral portion is conducted by the candidate's committee as a whole.

Candidates in this program may have a wide variety of educational experiences, depending on the fields of study chosen. Small group instruction, seminar work, independent study and reading, experience with computers, internships and laboratory work are among the possibilities.

Admission Requirements

A student wishing to major in social studies for a master's degree must present a minimum of 20 semester hours of credit in the area of social studies earned as an undergraduate in an accredited institution. The transcript of the applicant must show a minimum grade-point average of 3.5 on all work undertaken in the social studies up to the time of application. After having declared a social studies major, a student must maintain a 3.5 grade-point average.

Doctor of Philosophy

Graduates with a doctorate in social studies education can be found in a variety of professional positions. Some have gone into administration in institutions of higher education and are serving as presidents, provosts or deans of faculty or graduate studies. Some are department chairs in colleges of education or curriculum directors in large school districts. Many are engaged in teacher education programs in colleges and universities. Quite a few are college instructors in their areas of academic concentration. The emphasis in the doctoral program is on broad but thorough grounding in two of the academic areas chosen from history and the social sciences, and specialization in some aspect of professional education.
The program consists of a minimum of 90 semester hours of coursework and dissertation credit beyond the bachelor's degree and exclusive of tool requirements established by the College of Education. These credits are to be distributed among two of the cooperating disciplines—anthropology, economics, geography, history, political science, psychology or sociology—and professional education. Depending upon the background and needs of the candidate, work in the two disciplines chosen will comprise between 60 and 75 percent of the total 90 semester hours, work in education between 25 and 40 percent.

Depending upon the areas of study chosen by the candidate, there will be opportunity for regular class work, small group instruction, internships, independent study, field work and laboratory and computer experience. Seminar and advanced work in courses numbered 200 or above is required in each of the three areas of study. After most of the coursework has been completed, a qualifying examination of approximately nine hours—normally three hours in each field of study—is required. When the dissertation has been completed, the candidate will defend it orally.

The research problem may be in either of the two academic fields chosen for study, or it may be related to social studies education.

Admission Requirements

Candidate for the doctorate in social studies education who have earned a bachelor's degree in history or one or more of the social sciences at an accredited institution, and a master's degree in history, a social science or education or related field. It is expected that performance on the Graduate Record Examination be satisfactory, and the academic record of the candidate provide promise of scholarly success.

Special Facilities

Students in social studies education have access to the facilities and services of the cooperating departments, including the College of Education. Special agencies and services are also available, such as the University Hospital School, the Iowa Center for Education in Politics, the Bureau of Educational Research, the Institute of Public Affairs, the Iowa Educational Information Center, the Curriculum Laboratory, the Statistical Laboratory, the Reading Clinic, the Computer Center, and other facilities.

The faculty members who serve as social studies education advisors and coordinators are experienced classroom teachers whose advanced degrees have been earned in history, the social sciences and education. Their interests are in various aspects of research and publication, consultation work and in working with schools in curricular revision.

Courses

Coursework undertaken for social studies education degree (except in cooperating disciplines) and psychology, economics, geography, history, political science, sociology, and professional education of the College of Education. However, coursework for advanced degrees may be completed for one third of the credit in social studies courses.

155:301:206 Seminar in Social Studies Education 1.5 a.h.

Individualized readings, field studies and technical projects. Focus in History and social sciences, as in problems of urbanization and education. May be repeated. Prerequisite: consent of instructor.

155:329 Seminar in Social Studies Education 1.5 a.h.

Reading and discussion on significant developments in history, social sciences and social studies education; selected investigative paper required. Prerequisite: consent of instructor. Same as 155:377.

Social Work

Director: Ruth A. Beaudette
Assistant Director: Ralph E. Anderson
Program Coordinator: Thomas A. Weil
Program Assistant: Paul F. Oller, Mildred Steele

Faculty

Professor Emeritus of Economics, George F. W. Robey
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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.

Admission

Admission to the undergraduate program in Social Work requires:
- Completion, with at least a C grade, of the introductory course (421,52), which can be taken no earlier than the sophomore year.
- At least a 2.25 grade-point average on a 4-point scale; and
- Completion of the application process.

For more information, contact the coordinator of the undergraduate program in Social Work.

Graduate Program

The Master of Social Work degree requires at least 52 semester hours of credit in graduate courses approved by the School of these, at least 28 semester hours must have been earned after admission to the School of Social Work at The University of Iowa. Students who have completed an accredited undergraduate map in social work are eligible to qualify to the degree with 40 semester hours. Application of this 12-credit reduction will be coordinated with the student's advisor.

After satisfying first-semester foundations requirement of the equivalent, students may choose one of the three concentrations described below, or may choose a "generalist" program.

Students who elect a concentration must take 12 semester hours of courses in that concentration, plus a minimum of four hours in each of the other two concentrations.

Students who elect the generalist program must take at least four hours in each of the three concentrations, plus various electives.

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 (PFS) practitioners for direct service to persons, families and small groups, content includes study of functional and dysfunctional behavior, theory and practice of treatment, theory and research methodology as applicable to direct services, values and ethical questions, and contemporary issues in service delivery.

Organization of Human Services prepares students for administrative positions in social service organizations. Content includes administrative processes, planning, supervision, consultation, and organizational development. Students examine operational processes, the implementation of organizations in the community, evaluative methods, and alternatives in organizing. Topics include administration, community organization, teaching, supervision, and planning.

Social Development/Alternative Futures focuses on social change processes directed toward a society based on humanitarian value assumptions. It explores alternative social policies and socio-economic political systems. It is an interdisciplinary study of personal, small group, and institutional change both domestically and internationally. Topics include appropriate technology, world futures, social planning, community development, and organizational change.

Students normally take one semester of full-time classroom work on the Iowa City campus, followed by three semesters of concurrent practicum and classroom work.

An alternative plan is two semesters of full-time coursework followed by a block placement of 8-8 months. Some students remain in the Iowa City-Cedar Rapids area for the entire program, but most students are assigned to either the Des Moines or Davenport centers for the first three semesters. This normally involves relocation, since the centers are respectively 115 and 50 miles away from Iowa City. In addition to the Des Moines and Davenport centers, the School maintains a center in Sioux City. Part-time students may take coursework in these centers. At least one faculty member is resident in each community in which there is a center. Students must maintain at least a 3.0 cumulative grade-point average on a four-point scale and must have satisfactorily completed all required M.S.W. coursework, including a research requirement.

The M.S.W. program is accredited by the Council on Social Work Education.

Continuing Education

Extension courses are offered in each Edgewood Center, and other communities as well. A revision to the M.S.W. program is not a prerequisite for enrolling in extension courses. Enrollment may be limited.

Joint Degree Programs

Twelve credits of the social work program can be applied to a joint degree in either urban and regional planning. Admission to these programs is approved through separate application. Joint degree programs with other departments may be explored. The School of Social Work should be advised in advance of the student's intention to pursue joint degrees.

Special Features

The School provides a physical and social milieu that supports a people-centered approach to professional education. Inclusion is a strong commitment to student participation in School governance. For students with specialized interests, the School administers a Gerontology Center, a Regional Child Abuse Center, and an interactive clearinghouse for Home-Based Services to Children, an Institute for Social Development.
Courses

Primarily for Undergraduates

421:1 Helping Individuals and Families
421:2 Social Work Practice

Types of services which occur in the public social welfare system; the shelter of the personal social worker, his relationship with clients, and his work with them; a specific emphasis on protective services to women and youth; preparation for professional social work; the public social worker; the relationship between the social worker and society; and the role of the social worker in society.

421:3 Social Work Practice
421:4 Social Work Practice

Areas of specialization include social work in health, education, mental health, and community organization. May be repeated as a seminar.
421:177 Physical World Futures 3 s.h.
Analysis of how the world uses energy: scientific techniques; for human, and population; and sustainability in terms of their implications for solving world-scale problems; alternative methods of approach to the future.

421:181 Constitutional Law and Procedure in Criminal Justice 3 s.h.
Constitutional foundations of criminal justice and the development of the case law, both adult and juvenile; evolution of due process for the enhancement of the guarantees of due process through procedural and appellate review; bail, bail, and pretrial procedures; issues of probation, imprisonment, and parole.

421:182 Social Work Practice in Criminal Justice 3 s.h.
Social work practice in criminal justice, with emphasis on correctional case management in low-level offenders, from others in social services, and to treatment approaches most relevant for working with offenders. Prerequisites: junior standing.

421:183 Issues in Criminal Justice and Corrections 3 s.h.
Analysis of contemporary programs, organizational structures, and administrative processes in criminal justice; particularly corrections, and the social policy issues affecting these contact events range from term to term to class attendance.

421:190 Training Group Process 2-3 s.h.
Designed to enable students to understand selected group processes, groups, and group processes, and their own personal experience; students participate in a structured group experience, which focuses on personal development, groups, and group processes, and their own personal experience; students participate in a structured group experience, which focuses on personal development, groups, and group processes, and their own personal experience; students participate in a structured group experience, which focuses on personal development, groups, and group processes, and their own personal experience.

421:200 Work and Social Welfare 2 s.h.
Students will be able to identify and describe the social work professions and principles of social work practice.

421:201 Criminal Justice and Corrections 3 s.h.
Students will be able to identify and describe the social work professionals and principles of social work practice.

Primarily for Graduates

(These courses are not available to undergraduates.)

422:036 Integrative Seminar 3 s.h.
Examination of one's works, cultural and social processes, and knowledge within the context of social work education and the social work profession. Two hours lecture and one hour tutorial. Prerequisites: full-time graduate registration.

422:039 Community Organization 3 s.h.
Examination of concepts and principles of intervention in communities and organizations; the planning process; interpersonal organization within the social work profession; development of skills in assessing issues and situations, and to design and implement programs and organizations.

422:149 Group Care Services for Children: The Need, the Use, and the Implementation 3 s.h.
Interdisciplinary seminar to examine ethical, legal, and protective considerations in standards for child-care homes, including health safety; nutrition, 6-8, and approximately, and educational needs of children. Same as 70:1:14, 20:214.

422:160 Interdisciplinary Approaches to Supporting Young Children and Their Families 2-4 s.h.
Interdisciplinary seminar focusing on identification of at-risk groups in the population and on prevention, assessment and management of educational and developmental delays identified as potential to interfere with children's development. Prerequisites: completion of three introductory courses. Same as 70:2:16, 21:17, 26:621.

422:200 Group Leadership in Human Services 2-3 s.h.
Theoretical issues and research findings, as they relate to individual group processes and outcomes, with primary emphasis on individualization to determine information and interactions associated with groups. Prerequisites: graduate-level human services courses. Required weekly meeting of student group serves as a starting point for discussion of group dynamics and processes.

422:217 Social Services in Industry 2 s.h.
Identification of characteristics and needs of the work force and selected groups within it, youth, women, and working-class employees; e.g., examination of social services delivery to women and their families, including counseling for personal or social-related problems.

422:220 Family Law 3 s.h.
Principal legal aspects of family life, including marriage and divorce, 2-4 s.h., adoption, and paternity, and juvenile law, and principles of public policy on family and marriage, termination of parental rights, school discipline, juvenile crime, bankruptcy, real estate, estates, and wills.

422:221 Family Welfare 3 s.h.
Social policy and the family: how attitudes, values, policies, and programs which bear on the family through the cycle of life; impacts of public policy on the family and its consequences, pt.

422:231 Federal Policy Issues in Health Care 2 s.h.
Analysis of health issues in our country and abroad; an introduction to the health care delivery system. Same as 70:2:31.

422:240 Social Work and Social Welfare 3 s.h.
Critical study of selected topics in the social welfare field. May be repeated.

422:241 Social Work Practice in Health Care 3 s.h.
Structure and functions on structure and function of changes in family and changes in welfare for social work practice. Prerequisite: 60:2:41.

422:250 Aging and Social Work 3 s.h.
Behavioral characteristics of aging, aging policies and programs, intergenerational and intergenerational differences, aging, and policies and programs; administrative practices, aging, and policies and programs; administrative practices, aging, and policies and programs.

422:270 Family and Family Structures 3 s.h.
Prerequisite: structure and function of changes in family and changes in welfare for social work practice.

422:280 Sociology and Classification 3 s.h.
Survey of various social systems and methodologies used in psychosocial setting: critique of new social systems and methodologies used in psychosocial setting: critique of new social systems and methodologies used in psychosocial setting: critique of new social systems and methodologies used in psychosocial setting: critique of new social systems and methodologies used in psychosocial setting.

422:283 Seminar: Theories of Personality 3 s.h.
Prerequisite: concepts, human, and humanistic, other comprehensive framework.

422:285 Human Development through the Life Span 3 s.h.
Biological process and development of individual identity, considering major biological, psychosocial, societal, and cultural determinants of normal human growth and behavior.

422:290 Social Work Practice in Health Care 3 s.h.
Program structure and policy base of the general field of health care, with particular emphasis on the role and function of FWHC-careers compared with health care policy and practice for women; issues of specialty on the role of the health care provider in the practice of health care.

422:300 Family Therapy 3 s.h.
Overview of several approaches to family therapy, and examination of family dynamics and theories underlying these approaches. Prerequisites: 422:10, 421:30, or permission of instructor.

422:302 Group Psychotherapy 3 s.h.
Methods of group therapy, with emphasis on specific issues in group therapy, practices for treating clients with various demographic groups, and to provide experience based on students' interests, needs, and abilities.

422:306 Mental Health Care 3 s.h.
Introduction to the theory and practice of mental health care and the mental illness prevention by the teaching of preventive mental, social, and other activities of social interaction.

422:310 Social Work 3 s.h.
Study of the social institution and the activities of the social work profession: examination of selected models of social work practice as well as issues.

422:334 Assessment and Intervention of Child Welfare 3 s.h.
Theoretical and practical experiences in promoting professional and social work services to children under 18, with emphasis on approaches to assessment of social, emotional, and functional capacities, and on approaches to intervention of problems.

422:340 Human Services Administration 3 s.h.
Selected topics in organization, administration, and organizational behavior; a study of social services organizations; personal aspects of administrative systems.

422:341 Advanced Management Lab 2-4 s.h.
Examination of applied management theories and skills. Prerequisites: 60:2:41, 60:2:125, 60:2:130, 60:2:140 and 60:2:145.

422:346 Management Seminar 2-4 s.h.
Application of social theory to management problems, with emphasis on situations in social welfare management; with emphasis on situations in social welfare management.

422:361 Social Work Evaluation 2-4 s.h.
Application of social work evaluation to complex situations in social welfare management; with emphasis on situations in social welfare management.

422:362 Teaching Supervision and Consultation 2-3 s.h.
Role of supervision, teaching, and consultation in the supervision of professional development in human services.

422:364 Advanced Social Work Research 2 s.h.
Participation in research directed by faculty, which may extend over several terms, may be repeated.

422:368 Advanced Social Work Research 2 s.h.
Continuation of 422:14, which is prerequisite. Application of advanced research to particular social welfare issues such as needs assessment, program evaluation and policy analysis.
Graduate Programs
The graduate program trains sociologists for professional careers. It has a research emphasis and primarily prepares sociologists for teaching and research positions in colleges and universities. All graduate students are required to become competent in general theory and quantitative methods, in addition to specializing in substantive areas. Opportunities for research, using survey, experimental and observational methods, are available in the Department.

The Department also provides professional training in data control. Students interested in this type of training enroll in the Master of Arts in Criminal Justice and Corrections program.

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 Sociological Theory, 34-214 Elementary Statistics and Data Analysis and 34-215 Sampling, Measurement and Observation 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 46 semester hours and a research paper for a 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 those hours are also credited toward an M.A. in sociology. At the discretion of the student's M.A. committee, the Department of Sociology may credit up to 12 hours of law toward the M.A. degree. This cross-creditting allows a student to receive the J.D. and the M.A. by taking less coursework 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 society.

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 asked to pass over one major and one minor area chosen from among the areas currently represented on the faculty, such as social psychology, deviance criminology, family, social stratification, organizations, theory, methods and statistics.

A detailed statement of regulations for graduate study is available upon request. Prospective doctoral candidates should carefully examine this statement.

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 Exam, 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 the Chair, 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 Exam. Enrollment in this program is currently limited to five admissions per year. A handful is available at the Department office.

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 to 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 also offers tuition scholarships to some students.

Special Facilities
The Department maintains a card punch, two terminals for communicating with the University's main computer (IBM 360/65 and CYBER 70), 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 (CIRB), a data archives unit, and the Iowa Urban Community Research Center (UICRC). The
Advanced Courses

Social Theory
3 s.h.
Conservation on selected works of major 18th-century theorists and several representatives contemporary sociologists. Recommended for sociology majors and required for honors majors. Prerequisite: 34:117 or junior standing.

1981 Theories of Sociology 3 s.h.
Conservation of interactionist work, emphasizing the work of Alderfer, Parsons, and Blau. Prerequisite: 34:117 or permission of instructor.

1982 Sociology of Law 3 s.h.
Examination of the law as a system and its relationship to social structure. Prerequisite: 34:117 or permission of instructor.

1983 Sociology of Religion 3 s.h.
Conservation of selected works of major 19th and 20th century sociologists, e.g., Marx, Weber, Durkheim, Giddens, and Veblen. Prerequisite: graduate standing or consent of instructor.

2984 Special Topics in Sociology 3 s.h.
Selected topics in sociology. May be repeated. Prerequisites: 34:117 and 34:202 or consent of instructor.

2985 Sociology of Knowledge 3 s.h.
Focus on the knowledge of sociology in the social sciences. Whether the relationship between sociology and social control in microsociological and macro-sociological levels. Prerequisite: consent of instructor.

2986 Seminar: Contemporary Social Theory 3 s.h.
Comparison and examination of leading contemporary social theories and approaches. Prerequisite: consent of instructor.

2988 Seminar: Social Systems Theory 3 s.h.
Survey of systems on general systems theory, dealing with the sociological and interactional aspects of social structure. Prerequisites: graduate standing or consent of instructor.

Statistics and Methods of Research

11111 Elementary Statistics in Social Research 3 s.h.

11112 Elementary Statistics in Social Research 3 s.h.

311 Social Research 3 s.h.
An introductory course in social research methods. Prerequisites: 34:111, 34:112.

9111 Social Research 3 s.h.
Practicum in social research. Prerequisite: 34:111, 34:112.

9112 Social Research 3 s.h.
Practicum in social research. Prerequisite: 34:111, 34:112.

11113 Social Research 3 s.h.
Practicum in social research. Prerequisite: 34:111, 34:112.

11114 Social Research 3 s.h.
Practicum in social research. Prerequisite: 34:111, 34:112.
34:156 Sociology of Medicine
3 h. a.
Introduction to and expanding field of medical sociology: diseases and the sick person, health practices and penances, health institutions (the hospital), the costs and organization of health services, medical education. Prerequisites: 34:1 or 34:2 or 34:120, or consent of instructor. Same as 34:160.

34:156 American Society
3 h. a.
An integrated perspective on structure and integration: approaches to study of large, complex, modern societies: institutional interactions, institutions as agents of social control; institutional desegregation as an effect of social change. Prerequisite: 34:1 or consent of instructor. Same as 44:160.

34:157 Sociology of Religion
3 h. a.
Conservative study of religious beliefs and practices: the social organization of social consequence is invasive of societies. Prerequisites: 34:1 or 34:2 or 34:120, or consent of instructor. Same as 34:158.3

34:161 Sociology of Popular Culture
3 h. a.
Analysis of the sociological aspects of music and mass media, especially of popular culture and mass media. Prerequisites: 34:1 or 34:2, or consent of instructor. Same as 34:158.

34:161 Sociology of Art
3 h. a.
Sociology of employment, the social roles of the artist, the relationship of the artist to economic change, the social roles of the artist in society today. Same as 34:158.

34:161 Seminar: Sociology of Art
3 h. a.
Historical and contemporary themes of society and art: critical examination of contemporary conceptual and methodological alternatives to the study of religious phenomena. Same as 34:158.

34:250 Education and Social Change
3 h. a.
Focus on the role of educational institutions in connection with political and social structures in the process of social change. Illumination of theories of social change through case studies of educational systems in both the industrialized and the developing worlds. Same as 34:158.

34:263 Seminar: Medical Sociology
3 h. a.
Theory and research on health institutions and modern medical practice, the relationships between illness and the physical environment, interclass differences in health, social mobility and health, the social incidence of disease. Prerequisites: graduate standing and consent of instructor.

34:265 Seminar: Communication and Change
3 h. a.
Theory, research, and methodology on mass media and social change, topics covered include diffusion, innovation, mass media and social change, organizations, revolutionary organizations and organizational evolution. Same as 34:158.

Community and Population

34:176 Population and Society
3 h. a.
Factors in society determining population size, composition and distribution: population distribution, the process of social organization and the environment; welfare, report trends in American population and the environment, policies and programs. Prerequisites: 34:1 or 34:2, or consent of instructor.

34:172 Social Dynamics of Urban Life
3 h. a.
Historical and contemporary processes operating within urban societies; the Chicago school, urban growth and social change, comparative urban studies, third world cities, the urban ghettos in the U.S. and many and needy of suburbs. Prerequisite: 34:1.

34:174 World Population Problems
3 h. a.
World population trends and pressures: their causes and consequences by countries and world regions; cultural patterns in migration patterns and fertility planning. Prerequisites: 34:1 or 34:2 or 34:120, or consent of instructor.

34:175 Introduction to Demography
3 h. a.
Principles and techniques for understanding the demographic characteristics of modern populations, emphasis on both current and historical demography. Prerequisites: 34:1 or 34:2 or 34:120, or consent of instructor.

34:179 Public Policy and Community Organization
3 h. a.
Public and private policy, federal, state, and local, political and social forces underlying community organization. Prerequisites: 34:1 or 34:2, or consent of instructor.

34:185 Urban Growth and Development
3 h. a.
Cross-cultural and interdisciplinary analysis of problems associated with urbanization and development in the developing nations. Prerequisites: graduate standing in a social science. Same as 112:675, 303:75, 40:675, 120:725.

34:278 Seminar: Urbanization
3 h. a.
Problems growing up in the inner city and urban population and the relative decline in rural population; trends in the mobility and migration of people and the middle and working class. Prerequisites: graduate standing and consent of instructor. Same as 44:801, 30:659.

Stratification and Organizations

34:153 Social Political Sociology
3 h. a.
Sociological analysis of political behavior and belief, group behavior in political processes, modern political institutions, power and class-relations, political systems: relationship of the political system to the social system. Prerequisites: 34:1.

34:154 Education, Race and Ethnicity
3 h. a.
Examination of the role of education in ethnic and social stratification in the U.S. and other countries; integration of the influence of race and ethnicity with the social system, socialization patterns and institutional resources in the formation of educational aspirations and the social class. Same as 34:158.

34:156 Race and Ethnic Relations
3 h. a.
Multidisciplinary study of intergroup relations with special emphasis given to historical, social, economic, and psychological influences in the study of minority group relations. Prerequisites: 34:1 or 34:2.

34:160 Economic Sociology
3 h. a.
Economic sector - provides a micro-sociological perspective on the role of education in social systems. Exploration of the thesis of formal education and social stratification, social mobility and economic achievement in the U.S. and selected countries. Same as 34:1.

34:161 White-Society Sociology of Education
3 h. a.
Analytical social psychological aspects of the political, social, economic and psychological influence on the social status of minority groups. Prerequisites: 34:1 or 34:2.

34:164 Organizations
3 h. a.
Approach to the study of organization of economic and economic organizations, the role of power and authority within the organization and between the organization and its environment. Prerequisite: 34:1 or 34:2, or consent of instructor.

34:165 Occupations and Professions
3 h. a.
Work commitment, prestige of occupations, occupational and professional socialization, occupational groups and organizations, alienation, femininity, and structural change. Prerequisites: 34:1 or 34:2 or 34:120, or consent of instructor.

34:166 Social Inequality
3 h. a.
Major theoretical perspectives concerning social inequality; major theoretical perspectives in the United States and in other societies; trends in and causes of social inequality; selected contemporary social inequality. Prerequisites: 34:1 or 34:2, or 34:120.

34:295 Seminar: Political Sociology
3 h. a.
Selected topics in political sociology.

34:296 Seminar: Social Stratification
3 h. a.
Selected topics in social stratification.

34:296 Seminar: Social Stratification
3 h. a.
Selected topics in social stratification.

34:296 Seminar: Social Stratification
3 h. a.
Selected topics in social stratification.

34:296 Seminar: Social Stratification
3 h. a.
Selected topics in social stratification.

34:390 Methodology of Research
3 h. a.
Selected topics in methodological and organization theory. Prerequisite: 34:1 or 34:2, or consent of instructor.

34:390 Methodology of Research
3 h. a.
Selected topics in methodological and organization theory. Prerequisite: 34:1 or 34:2, or consent of instructor.

34:491 Methodology of Research
3 h. a.
Selected topics in methodological and organization theory. Prerequisite: 34:1 or 34:2, or consent of instructor.

34:492 Methodology of Research
3 h. a.
Selected topics in methodological and organization theory. Prerequisite: 34:1 or 34:2, or consent of instructor.

34:493 Methodology of Research
3 h. a.
Selected topics in methodological and organization theory. Prerequisite: 34:1 or 34:2, or consent of instructor.

Independent Reading and Research Program

34:590 Independent Study
3 h. a.
Supervised preparation for teaching in an introductory-level sociological course. Preparation of alternative course materials and teaching techniques; preparation of course materials, schedule, etc. Prerequisite: successful completion of an equivalent course. Prerequisites: 34:1 or 34:2.

34:590 Independent Study
3 h. a.
Supervised preparation for teaching in an introductory-level sociological course. Preparation of alternative course materials and teaching techniques; preparation of course materials, schedule, etc. Prerequisite: successful completion of an equivalent course. Prerequisites: 34:1 or 34:2.

34:590 Independent Study
3 h. a.
Supervised preparation for teaching in an introductory-level sociological course. Preparation of alternative course materials and teaching techniques; preparation of course materials, schedule, etc. Prerequisite: successful completion of an equivalent course. Prerequisites: 34:1 or 34:2.
Spanish and Portuguese

Department chair: George De Maha
Faculty professor: Julio Duran-Cordero, Oscar Fernandez, Joseph Spates

professors: Eduardo de Chaves, E.R. Rivas
associate professor: Cesar de Mello, Maria Amsel-Delar, R. Thomas Druegel, Enrique Fernandez Barrio, Ralph Perez, Esteban Pérez
associate professors: Oscar Ibarra, Philip Jacob, Thomas E. Lewis, John Mclachlan, Vicente Santolaya, John T. W lender
instructor: Patricia Williams

Degrees Granted: B.A., Spanish or Portuguese, M.A., (Spanish, Ph.D. (Spanish)

The Department provides coursework for undergraduate and graduate majors in Spanish or Portuguese, for the satisfaction of foreign language requirements for baccalaureate and advanced degrees in other fields, and for the satisfaction of the second foreign language requirement for undergraduate majors in English and in letters.

Knowledge of foreign language and culture is indispensable in many career areas. Students majoring in Spanish or Portuguese may find opportunities in such fields as business, transportation, industry, journalism, international broadcasting, and publishing, as well as teaching, research, library work, and translation.

Undergraduate Programs in Spanish

First- and second-semester Spanish courses intern and the four performance objectives: oral-oral interaction, speaking, reading, and writing—through the use of four-ait format and a variety of frequent testing of these skills. Students thereby acquire a broadly balanced evaluation of their strengths and weaknesses and can calculate and plot their progress in preparation for future work.

Third- and fourth-semester courses are conducted on a dual-track basis, allowing students to enroll in sections having either an aural-oral orientation or an emphasis on reading, writing, and content analysis.

Major in Spanish

The undergraduate major in Spanish consists of 30 s.h. of required coursework, according to the following program:

Language (12 s.h.)
35:117 Third-Year Language I 4 s.h.
35:118 Third-Year Language II 4 s.h.
35:137 Fourth-Year Language I 4 s.h.

Literature (9 s.h.)
Three of the following (both the Peninsular and the Spanish American areas must be represented):
35:101 Renaissance and Golden Age Literature 3 s.h.
35:102 Modern Spanish Literature 3 s.h.
35:103 Contemporary Spanish American Fiction 3 s.h.
35:104 Spanish American Poetry and Drama 3 s.h.

Civilization (3 s.h.)
One of the following:
35:114 Spanish Civilization 3 s.h.
35:115 Spanish American Civilization 3 s.h.

Electives (6 s.h.)
The remaining six hours may be elected from any course numbered 35:100 or above, except that no more than 2 s.h. may be elected in conversation courses 35:108, 35:195. One course given in English may be taken to satisfy 3 s.h. of this requirement. Provided additional readings are done in Spanish.

The undergraduate major program in Spanish described above will be followed by all students declaring a Spanish major after June 1, 1976.

High School Certification

Spanish majors who wish to teach high school teaching certification must complete 35:157 Spanish Phonology in addition to the requirements listed above. Several courses in the College of Education are also required, as is one semester of Practice Teaching, team in the senior year.

Transfer Credit

A maximum of 12 semester hours of credit in approved courses may be transferred from other institutions toward the requirements for the major in Spanish.

Honors in Spanish

Admission to the Honors Program in Spanish requires a minimum 3.0 overall grade-point average and a 3.2 average in Spanish. Graduation with honors in Spanish requires six semester hours earned in 35:121-122 Honors Literature and/or 35:123-124 Honors Spanish Language; an Honors essay in Spanish, and oral examination conducted in Spanish.

Spanish Teaching Minor

The Spanish teaching minor requires:
35:117 Third-Year Language I
35:137 Fourth-Year Language I and 35:157 Spanish Phonology. Students preparing for teaching certification at the secondary level are encouraged to elect additional courses in Hispanic literature and civilization.

Undergraduate Programs in Portuguese

First-year Portuguese courses provide training in understanding, speaking, reading, and writing. Second-year courses provide further training in these skills, with emphasis on comprehension and self-expression in Portuguese, through the reading and discussion of current journalistic prose.

Major in Portuguese

The undergraduate major in Portuguese requires courses, or their equivalents, beyond the second-year level:

Language (4 s.h.)
35:117 Third-Year Language I 4 s.h.
35:118 Third-Year Language II 4 s.h.

Literature (4 s.h.)
35:103 Brazilian Literature I 3 s.h.
35:106 Brazilian Literature II 3 s.h.

Civilization (6 s.h.)
35:115 Brazil People and Culture 3 s.h.
35:116 Modern Portugal 3 s.h.

Electives (4 s.h.)
35:103 Modern Brazilian Fiction I: Short Story 2 s.h.
35:104 Modern Brazilian Fiction II: Novel 2 s.h.
35:107 Introduction to Portuguese Literature 3 s.h.
35:108 Bank of Portuguese Expression 3 s.h.
35:102 Nineteenth-Century Brazilian Novel 3 s.h.
**Minor in Portuguese**
The undergraduate minor in Portuguese consists of 18 credits in Portuguese, with any combination of courses, including first- and second-year courses.

**Offerings for Undergraduate Nonmajors**
Undergraduate students in other disciplines may meet part of the College of Liberal Arts literature core requirement with 35:8 Contemporary Latin American Narrative, readings in English. The department offers several other literature and cultural survey courses which are taught in English and are of general interest. English-language courses in Hispanic literature are crosslisted with those for the major in literature, and further interdepartmental development of this kind is anticipated.

**Master of Arts in Spanish**
Candidates for the M.A. degree must have completed the equivalent of the under-graduate Spanish major. Deficiencies may be remedied with the appropriate coursework.

**Required coursework (36 s.h.)**
- 35:251 Medieval Spanish Literature 3 s.h.
- Golden Age Literature 3 s.h.
- 35:255 Spanish-American Literature 3 s.h.
- 35:208-209 Graduate Spanish Language I-II 6 s.h.
- 35:253 Historical Ibero-Romance Language I 3 s.h.
- 35:157 Spanish Phonology I 3 s.h.
- 35:259 Seminar in Teaching 3 s.h.
- Electives 5 s.h.

The student is also responsible for the works listed in the departmental reading list.

**Maximum Study Loads**
Maximum course registration is 15 graduate hours during the fall or spring semesters, and eight graduate hours during the summer session. One-quarter- and one-third-time teaching assistants are permitted to register for the maximum study loads. One-half-time teaching assistants may register for not more than 12 semester hours in the fall or spring semester, and for not more than six during the summer session. Additional hours may be taken only with Graduate College approval.

**Transfer Credit**
A maximum of nine semester hours of graduate credit in approved courses may be transferred from other institutions toward the 36-semester-hour requirement for the M.A. degree.

**Teaching Certification**
Exclusive of the practice-teaching requirement, graduate students may take the courses necessary for secondary teaching certification while completing M.A. requirements in the department.

**M.A. Examinations**
Three written examinations and one oral examination will be given. The student chooses from six topics for the written examination(s), but must include at least one topic from each of two areas: (a) Spanish language and stylistics, Medieval literature, or Golden Age literature; and (b) Modern Spanish literature, Spanish American literature, or Luso-Brazilian literature.

**Doctor of Philosophy in Spanish**
Two doctoral programs are available. One is dedicated to Hispanic literatures. Before his or her comprehensive examination the candidate must become well acquainted with another Romance language and literature (a Portuguese-Brazilian program is especially recommended), complete the equivalent of a year of college Latin, and demonstrate a reading knowledge of another approved foreign language. Qualifying examinations, to be taken during the second semester of residence by all students whose M.A. work was done at other institutions, consist of a two-hour written examination covering two to four literary works, or one major literary work and authoritative criticism of the work(s), as previously determined by the student and the Department; an oral examination; and a research paper prepared at The University of Iowa.

The second doctoral program provides for specialization in Spanish language and literature with emphasis on language. Before his or her comprehensive examination, the candidate must have completed a course in linguistics and the equivalent of three semesters of college Latin, and demonstrated a graduate-level knowledge of a second approved foreign language and a reading knowledge of a third approved foreign language.

In both programs, coursework and individual reading must be designed to give the candidate a thorough knowledge of the Spanish language, its literature, and related civilization, from medieval to modern times; to provide adequate experience in a second Romance language; and to develop the candidate's capacity for critical analysis of literary texts.

The following fields together with the departmental doctoral reading list are considered a basic minimal program for the doctoral degree. The requirement may be fulfilled by acceptable studies at another institution or by the courses at Iowa indicated in parentheses. The requirement may also be met by independent reading and examination. The candidate is encouraged to pursue further studies in these and other areas, in line with his or her particular interests and in order to improve employment opportunities.

**Program I: Emphasis on Literature**

**History of the Spanish Language and Medieval Literature**
- 35:251 Medieval Spanish Literature 3 s.h.
- One additional course in Spanish medieval literature 3 s.h.
- 35:253 Historical Ibero-Romance Language 3 s.h.
- One additional course in Spanish or Romance Linguistics 3 s.h.
- Golden Age Literature 3 s.h.
- 35:255 Drama of the Golden Age 3 s.h.
- 35:256 Cervantes—Don Quijote 3 s.h.

**Program II: Emphasis on Linguistics**

**Modern Spanish Literature**
- 35:251 Medieval Spanish Literature 3 s.h.
- One additional course in Spanish literature 3 s.h.
- 35:253 Historical Ibero-Romance Language 3 s.h.
- One additional course in Spanish or Romance linguistics 3 s.h.
- Golden Age Literature 3 s.h.
- 35:255 Drama of the Golden Age 3 s.h.
- 35:256 Cervantes—Don Quijote 3 s.h.
Area E

A course in Brazilian literature 3 s.h.

Contemporary Language and Literature
35:208-209 Graduate Spanish Language I
6 s.h.

35:187 Spanish Phonology I
3 s.h.

or phonology component of 35:208

Literary Theory

One of the following:
35:217 Literary Theory and Explication of Texts 2 s.h.

35:284 Types of Modern Criticism 2-3 s.h.

Professional Training
35:211 Research Methods and Bibliography 2 s.h.

35:233 Seminar in Teaching 1 s.h.

Seminars

Two 300-level seminars in literature 4 s.h.

Specialization

Students in Program I desiring to specialize in 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 nonrequired course in each of the other areas. However, it is strongly recommended that whenever possible these courses be taken in addition to those in the basic 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
35:261 Medieval Spanish Literature I 3 s.h.

One additional course in Spanish Medieval Literature 2 s.h.

35:253 Historical Ibero-Romance Language I 2 s.h.

One additional course in Spanish or Romance Linguistics, excluding courses listed below.

Comparative Linguistics
35:250 Comparative 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 5 s.h.

35:221 19th Century Spanish Poetry and Drama 5 s.h.

35:226 20th Century Spanish Poetry 5 s.h.

35:226 20th Century Spanish Essay 5 s.h.

35:241 20th Century Spanish Drama 3 s.h.

Latin American Literature

Three courses from at least two fields listed in Program I

Comtemporary Language and Stylistics
35:187 Spanish Phonology I 3 s.h.

Graduate-level phonetics/phonology 2 s.h.

35:208-209 Graduate Spanish Language I-II 6 s.h.

Additional graduate language (excluding seminars below) 2 s.h.

Professional Training
35:211 Research Methods and Bibliography 2 s.h.

35:233 Seminar in Teaching 1 s.h.

Literary Theory

One of the following:
35:217 Literary Theory and Explication of Texts 2 s.h.

35:284 Types of Modern Criticism 2-3 s.h.

Professional Training
35:211 Research Methods and Bibliography 2 s.h.

35:233 Seminar in Teaching 1 s.h.
Special Facilities
The Language Laboratory provides facilities for language learning, teaching, and research. It includes standard and interactive resources, audio-visual equipment, and a library of audio-visual materials. The Laboratory also offers a variety of computerized testing and language assessment tools.

Financial Aid
Teaching and research assistantships are available to qualified graduate students. Normally, two years of 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 merit departmental standards, he or she will continue to receive support for a reasonable period of time, but usually not over four years. A student wishing financial support should apply directly to the departmental office.

For Undergraduates and Graduates
36:1193 Readings in Hispanic Literature 4 s.h.

36:326 Undergraduate Spanish Language 4 s.h.

36:326A Intermediate Spanish I 3 s.h.

36:12 Intermediate Spanish II 3 s.h.

36:12 Spanish Composition: Sophomore Level 3 s.h.

36:326B Intermediate Spanish II 3 s.h.

36:326C Advanced Spanish Composition 3 s.h.

36:126 Spanish Grammar and Composition: First Year 3 s.h.

36:126A Spanish Grammar and Composition: First Year 3 s.h.

36:126B Spanish Grammar and Composition: First Year 3 s.h.

36:126C Spanish Grammar and Composition: First Year 3 s.h.

36:126D Spanish Grammar and Composition: First Year 3 s.h.

36:126E Spanish Grammar and Composition: First Year 3 s.h.

36:126F Spanish Grammar and Composition: First Year 3 s.h.

36:126G Spanish Grammar and Composition: First Year 3 s.h.

36:126H Spanish Grammar and Composition: First Year 3 s.h.

36:126I Spanish Grammar and Composition: First Year 3 s.h.

36:126J Spanish Grammar and Composition: First Year 3 s.h.

36:126K Spanish Grammar and Composition: First Year 3 s.h.

36:126L Spanish Grammar and Composition: First Year 3 s.h.

36:126M Spanish Grammar and Composition: First Year 3 s.h.

36:126N Spanish Grammar and Composition: First Year 3 s.h.

36:126O Spanish Grammar and Composition: First Year 3 s.h.

36:126P Spanish Grammar and Composition: First Year 3 s.h.

36:126Q Spanish Grammar and Composition: First Year 3 s.h.

36:126R Spanish Grammar and Composition: First Year 3 s.h.

36:126S Spanish Grammar and Composition: First Year 3 s.h.

36:126T Spanish Grammar and Composition: First Year 3 s.h.

36:126U Spanish Grammar and Composition: First Year 3 s.h.

36:126V Spanish Grammar and Composition: First Year 3 s.h.

36:126W Spanish Grammar and Composition: First Year 3 s.h.

36:126X Spanish Grammar and Composition: First Year 3 s.h.

36:126Y Spanish Grammar and Composition: First Year 3 s.h.

36:126Z Spanish Grammar and Composition: First Year 3 s.h.

36:126AA Spanish Grammar and Composition: First Year 3 s.h.

36:126AB Spanish Grammar and Composition: First Year 3 s.h.

36:126AC Spanish Grammar and Composition: First Year 3 s.h.

36:126AD Spanish Grammar and Composition: First Year 3 s.h.

36:126AE Spanish Grammar and Composition: First Year 3 s.h.

36:126AF Spanish Grammar and Composition: First Year 3 s.h.

36:126AG Spanish Grammar and Composition: First Year 3 s.h.

36:126AH Spanish Grammar and Composition: First Year 3 s.h.

36:126AI Spanish Grammar and Composition: First Year 3 s.h.

36:126AJ Spanish Grammar and Composition: First Year 3 s.h.

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36:126AL Spanish Grammar and Composition: First Year 3 s.h.

36:126AM Spanish Grammar and Composition: First Year 3 s.h.

36:126AN Spanish Grammar and Composition: First Year 3 s.h.

36:126AO Spanish Grammar and Composition: First Year 3 s.h.

36:126AP Spanish Grammar and Composition: First Year 3 s.h.

36:126AQ Spanish Grammar and Composition: First Year 3 s.h.

36:126AR Spanish Grammar and Composition: First Year 3 s.h.

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36:126AT Spanish Grammar and Composition: First Year 3 s.h.

36:126AU Spanish Grammar and Composition: First Year 3 s.h.

36:126AV Spanish Grammar and Composition: First Year 3 s.h.

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36:126AX Spanish Grammar and Composition: First Year 3 s.h.

36:126AY Spanish Grammar and Composition: First Year 3 s.h.

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36:126AB Spanish Grammar and Composition: First Year 3 s.h.

36:126AC Spanish Grammar and Composition: First Year 3 s.h.

36:126AD Spanish Grammar and Composition: First Year 3 s.h.
General Departmental Requirements

Bachelor of Arts

Regardless of his or her area of specialization, a student seeking a Bachelor of Arts degree in the Department must earn: A minimum of 24 semester hours in the Department, including at least one course in the dramatic art division, at least one course in the broadcasting and film division and at least one course in the historical studies or communication research division; and A minimum of eight semester hours of production/performance courses and a minimum of eight semester hours of nonproduction/performance courses in the Department.

A student may specialize in rhetorical studies, dramatic art, broadcasting and film, or speech education. The additional requirements for these majors are cited in the division sections.

Master of Arts

Departmental requirements for the Master of Arts degrees are:

A minimum of 20 semester hours, including 36-300 Introduction to Research or its equivalent; A research thesis or, for the nonthesis degree, a graduate seminar involving significant original research; Successful completion of a six-hour written examination, the scope of which is determined by the candidate's division and his or her graduate committee; and A minimum cumulative GPA of 3.0 for courses on the plan of study.

The application deadline for fall or summer term is February 1 for maximum probability of admission. The minimum cumulative undergraduate GPA required for admission is 3.0.

Master of Fine Arts in Dramatic Art

See Dramatic Art section.

Educational Specialist (for Junior College Teaching)

Departmental requirements for the Educational Specialist degree are:

A minimum of 60 semester hours, including 36-300 Introduction to Research, a course in the teaching of speech, an approved 18-hour and at least 16 semester hours completed in the College of Education's graduate program in higher education; Successful completion of a research report; A semester's internship in an assigned teaching position; Satisfactory performance on a nine-hour written examination on areas of learning agreed upon by the student and his or her graduate committees; and 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.

Doctor of Philosophy

Departmental requirements for the Doctor of Philosophy degree are:

A minimum of 72 hours of graduate credit, exclusive of research tools and dissertation; 36-300 Introduction to Research or its equivalent, at least two courses in theory taken within the Department, and others as determined by the student's advisor and graduate committee, in consultation with the student; Successful completion of a qualifying examination and demonstration competence in the student's research and major areas of learning; A substantive scholarly dissertation; and A 3.0 minimum cumulative GPA for courses on the plan of study.

The application deadline for fall or summer term is February 1 for maximum probability of admission. Admission decisions are based upon composite consideration of the applicant's undergraduate achievement, letters of reference and other evidence of scholar's potential or achievement. Graduate Record Examination results and samples of one's scholarly work are desirable for the latter purpose.

Interdivisional Courses

36-10 Workshop in Speech and Dramatic Art 2-3 h.

Seminars in the Social Sciences 3 h.

Speech Education

Professor in charge: Douglas Thomas
Degree offered: M.A., M.A.T.

The speech education major requires a minimum of 20 semester hours in the Department of Speech and Dramatic Art. The program must be planned with approval of the Speech Education Advisor. The following should include:

36-33 Voice Improvement for Teachers 3 h.

36-57 Oral Interpretation of Literature 3 h.

36-101 Directing Speech Activities 3 h.

Two courses from the Dramatic Art Division 6 h.

Two courses from the Broadcasting and Film Division 6 h.

Two courses from Rhetorical Studies Division 6 h.

Noncredit or nonperformance credit 6 h.

Theory and related happenings, practice in voice laboratory, dialect, performance procedure, and original monologues.
In addition to the secondary education T.E.F. foundations courses, students seeking teacher certification in speech and dramatic art must also register for:

- 78:160 Methods: Speech 5 s.h.
- 36:180 Methods: Speech 3 s.h.
- 78:191-192 Observation and Lab Practice in the Secondary School 12 s.h.
- 78:187 Seminar: Curriculum and Student Teaching 3-3 s.h.

Majors and minors are advised to complete the introduction-cultural core requirement with 11:21-25 Drama in Western Culture and major social science core requirement with 16:211 Language and Society and 301 Introduction to American Politics. Majors are strongly advised to complete a minor certification in English or other tangential field to strengthen both their major and employment opportunities, and to accumulate a record of achievement in University-wide, broadcasting and film, resident theater and theater activities.

Minor Certification in Speech and Dramatic Art

Completion of 20 semester hours in speech and dramatic art is required. These hours must include speech methods and a selection of 12 credits in courses in any two of the following three areas:

(1) Public communication (communication theory, interpersonal communication, argumentation, discussion and public speaking courses)

(2) Theater and dramatic art (acting, stagecraft, technical theater and oral interpretation)

(3) Broadcasting and film

Courses

- 36:187 Directing Speech Activities 3-3 s.h.
- 36:218 Public Speaking and Social Science 2-4 s.h.

Course Outline: The course introduces students to the concepts of the public speaking process and the social function of public speaking. Topics include audience analysis, public speaking, and the role of the speaker in society. Same as 78:187.

36:195 Critical Reading and Speaking 3 s.h.

Course Outline: The course introduces students to the concepts of critical reading and speaking. Topics include the analysis of written and oral communication, critical thinking, and the role of the speaker in society. Same as 78:187.

36:218 Public Speaking and Social Science 2-4 s.h.

Course Outline: The course introduces students to the concepts of public speaking and social science. Topics include the analysis of written and oral communication, critical thinking, and the role of the speaker in society. Same as 78:187.

36:210 Contemporary Communication Strategies 2-4 s.h.

Course Outline: The course introduces students to contemporary communication strategies. Topics include audience analysis, public speaking, and the role of the speaker in society. Same as 78:187.

Communication Research

Professor in charge: John W. Ruža

The program in communication research leads either to the M.A. or the Ph.D. programs. The programs provide for individual students to provide the background for and experience in 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 requirement in the Department of Psychology or in the College of Education, and take 262:398 Philosophical Problems of the Social Sciences in the Department of Philosophy. Work in advanced statistics and multivariate analysis may be used to fulfill the research tool requirements of this Department. Opportunities for varied research in addition to that required for theses or dissertation projects are available in the Department's Communication Research Laboratory. Several ongoing studies in preparation for dissertation and later research are available to doctoral candidates.

Courses

- 36:300 Communication Theory in Everyday Life 3 s.h.
- 36:383 Communication Theories in Social Relations 3 s.h.
- 36:384 Communication Theory, Speech and Society 3 s.h.
- 36:385 Communication Theory, Language and Society 3 s.h.
- 36:386 Communication Theory, Social Science 3 s.h.
- 36:387 Communication Theory, Psychology 3 s.h.
- 36:388 Communication Theory, Sociology 3 s.h.
- 36:389 Communication Theory, Anthropology 3 s.h.
- 36:390 Communication Theory, Political Science 3 s.h.
- 36:391 Communication Theory, Economics 3 s.h.
- 36:392 Communication Theory, Law 3 s.h.
- 36:393 Communication Theory, Psychology 3 s.h.
- 36:394 Communication Theory, Sociology 3 s.h.
- 36:395 Communication Theory, Anthropology 3 s.h.
- 36:396 Communication Theory, Political Science 3 s.h.
- 36:397 Communication Theory, Economics 3 s.h.
- 36:398 Communication Theory, Law 3 s.h.

Course Outline: Communication theory in social relations is a study of the relationship between communication and social behavior. The course covers theories of communication and social behavior, including the role of communication in social control, social change, and social stability. Same as 78:187.
Rhetorical Studies
Professor in charge: Douglas Clingher
Degrees offered: B.A., M.A., Ph.D.

Bachelor of Arts
This major is recommended for students preparing for active participation in public affairs, communication careers, or teaching. It is intended to serve as an effective focus for a sound liberal education.

Requirements include at least 24 and no more than 36 semester hours in the Department. The program aims at a relationship between doing and knowing—between courses that emphasize informed and guided improvement of oral performance, and courses devoted to theoretical, critical and historical study of the principles and practice of public address and the interrelations of public address and other arts of communication. The student concentrating in public address also is expected to complete a_tripartite number of courses in other departments in the College of Liberal Arts.

Program for majors including:
36:52 Voice improvement for Speakers and Actors

One of the following:
36:530 Communicating in Public
36:31 Group Communication
36:32 Interpersonal Communication
36:57 Oral Interpretation of Literature
36:181 Readers' Theatre

One of the following:
36:104 Theory and Practice of Argument
36:125 Theory and Practice of Persuasion
36:126 Interview and Conference Methods

One of the following:
36:60 Communication Theory in Everyday Life
36:70 Resistance to Persuasion
36:80 Communication and Contemporary Culture
36:110 Theories of Rhetoric
36:90 Anglo-American Public Communication: Early Period
36:103 Anglo-American Public Communication: Later Period
36:135 Contemporary Public Communication
36:140 Rhetoric of Human Rights

Selected courses in drama and theater, and in radio or TV-min.

At least 15 semester hours beyond the liberal arts group. Communication requirements in literature, history, psychology, philosophy, foreign language and/or social science.

Forensics
Through forensics, the rhetorical studies student at Iowa has the opportunity to expand research skills, develop improved listening habits, work on organization and amplification methods, and work on public speaking skills before audiences in the classroom. Students may choose to participate in debate, oratory, interpretive reading or extemporaneous 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 communication 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 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 include:
36:500 Introduction to Research;
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 basics of speech (voice and phonetics) or evidence of adequate private 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 his or her field of learning and to develop the research competencies essential to a life of productive scholarship.

For basic requirements, see the initial sections of this department's description.

Courses
36:25 Principles of Speech Communication
36:31 Group Communication
36:32 Professional Ethics
36:80 Communication in Public
36:104 Communication Theory
36:125 Theory and Practice of Persuasion
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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 his or her field of learning and to develop the research competencies essential to a life of productive scholarship.

For basic requirements, see the initial sections of this department's description.
with speech, hearing or language problems in hospitals, community centers, 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 B.S., or B.A. degrees in speech and hearing science do not qualify an individual to work professionally in the field but here as a primary purpose the preparation of students for graduate work. Hence, the undergraduate program emphasizes the normal processes of speech, hearing and language. These undergraduate programs 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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:15</td>
<td>Introduction to Speech and Hearing Processes and Disorders</td>
<td>3 h.</td>
</tr>
<tr>
<td>3:20</td>
<td>Phonetics of American English</td>
<td>3 h.</td>
</tr>
<tr>
<td>3:110</td>
<td>Articulatory and Acoustic Phonetics</td>
<td>3 h.</td>
</tr>
<tr>
<td>3:110</td>
<td>Anatomy of the Swallow and Hearing Mechanisms</td>
<td>3 h.</td>
</tr>
<tr>
<td>3:112</td>
<td>Fundamentals of Speech Science</td>
<td>3 h.</td>
</tr>
<tr>
<td>3:113</td>
<td>Introduction to Hearing Science</td>
<td>3 h.</td>
</tr>
<tr>
<td>3:117</td>
<td>Psychology of Language I</td>
<td>3 h.</td>
</tr>
<tr>
<td>3:180</td>
<td>Introduction to Linguistics</td>
<td>3 h.</td>
</tr>
<tr>
<td>3:118</td>
<td>Psychology of Language II</td>
<td>3 h.</td>
</tr>
</tbody>
</table>

Required Courses in Related Areas

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:115</td>
<td>Physics of Sound and Music</td>
<td>3 h.</td>
</tr>
<tr>
<td>3:140</td>
<td>Introduction to Statistical Methods</td>
<td>3 h.</td>
</tr>
<tr>
<td>3:1</td>
<td>Elementary Psychology</td>
<td>4 h.</td>
</tr>
<tr>
<td>3:13</td>
<td>General Psychology</td>
<td>4 h.</td>
</tr>
</tbody>
</table>

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 psychology, anthropology, and sociology.

Group 1

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:110</td>
<td>Learning and Motivation in Children</td>
<td>3 h.</td>
</tr>
<tr>
<td>3:111</td>
<td>Child Development</td>
<td>3 h.</td>
</tr>
</tbody>
</table>

Group 2

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:110</td>
<td>Psychology of Adjustment</td>
<td>3 h.</td>
</tr>
<tr>
<td>3:115</td>
<td>Personality</td>
<td>3 h.</td>
</tr>
<tr>
<td>3:183</td>
<td>Abnormal Psychology</td>
<td>3 h.</td>
</tr>
</tbody>
</table>

Other Requirements

Students requiring in speech and hearing science must also complete or have had the equivalent of college algebra and trigonometry, college physics dealing with light and sound, and a biology 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 not entered the University 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 Degrees

Master of Arts Degree

The M.A. program in speech pathology and audiology may be a professional program to prepare the student for immediate placement in clinical service positions, or it may be a general program of graduate study leading to additional study for the Ph.D. degree. The various programs for the professional M.A. are necessarily specified to ensure that upon graduation the student will meet the requirements for immediate professional placement; the general M.A. program allows greater flexibility of individual program plans.

It is presupposed that the student has a background of undergraduate courses in speech and hearing science, development of oral communication and psychology of human behavior essentially equivalent to an undergraduate major in this field.

Entering M.A. degree candidates are required to take preliminary comprehensive examinations covering coursework in speech and hearing that is considered prerequisite to graduate study. The results of these examinations are considered diagnostic in nature, providing the student and faculty advisor with a basis for developing and maintaining an appropriate plan of study. These examinations must be given prior to first registration in the program. The results 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 students 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 courses in relation to career objectives and interests.

A total of 26 semester hours is the minimum required for a master's degree in this Department. Credits 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 these are required to take final written/comprehensive examinations.

Requirements for the professional M.A. degree:

A. All Majors

1. 114: Neural Processes of Speech and Language 3 cr.
2. 315: Foundation of Clinical Management 3 cr.
3. 318: Audiometric Disorders 3 cr.
4. 210: Hearing Loss and Audiology 4 cr.
5. 314: Children's Language Disorders 3 cr.
6. 3144: Rehabilitation Audiology 3 cr.
7. 3182: Counseling for Related Professions 2 or 3 cr.
8. Additional semester hours of practicum registration sufficient to meet supervised, direct clinical experience requirements for Certificate of Clinical Competence in Audiology and to provide broad supervised practicum experience.

*Graduate undergraduate course will be accepted as meeting requirements (4 cr.)

B. Speech Pathology, General Clinical Emphasis

Courses listed under A and:

1. 318: Stuttering 3 cr.
2. 312: Voice Disorders 3 cr.
3. 319: Neuropathology of Speech and Language 3 cr.
4. 2327: Communicative Disorders 2 cr.
5. 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:

1. 3120: Fundamentals of Laboratory Instrumentation 3 cr.
2. 3151: Audiology Instrumentation Laboratory 1 cr.
3. 2140: Manual Communication 1 cr.
4. 2140: Introduction to Speech and Hearing 4 cr.
5. 3181: Advanced Audiology 4 cr.
6. 3240: Amputation for Hearing-Impaired 3 cr.
7. 3245: Aural Rehabilitation Procedures for Special Populations 3 cr.
8. Practicum and elective courses to bring total to at least 38 semester hours.

D. Audiology Major, General Clinical Emphasis

Courses listed under A and:

1. 3120: Fundamentals of Laboratory Instrumentation 3 cr.
2. 3151: Audiology Instrumentation Laboratory 1 cr.
3. 2140: Manual Communication 1 cr.
4. 2140: Introduction to Speech and Hearing 4 cr.
5. 3181: Advanced Audiology 4 cr.
6. 3240: Amputation for Hearing-Impaired 3 cr.
7. 3245: Aural Rehabilitation Procedures for Special Populations 3 cr.
8. Practicum and elective courses to bring total to at least 38 semester hours.

E. Audiology Major, School Hearing Clinician

Courses listed under A and:

1. 3120: Fundamentals of Laboratory Instrumentation 3 cr.
2. 3151: Audiology Instrumentation Laboratory 1 cr.
3. 2140: Manual Communication 1 cr.
4. 2140: Introduction to Speech and Hearing 4 cr.
5. 3181: Advanced Audiology 4 cr.
6. 3240: Amputation for Hearing-Impaired 3 cr.
7. 3245: Aural Rehabilitation Procedures for Special Populations 3 cr.
8. Practicum and elective courses to bring total to at least 38 semester hours.

Requirements for Employment

A number of states, including Iowa, require a state license in speech pathology or audiology for persons who work in positions other than in the public schools. Speech pathologists who meet the requirements listed above for the M.A. degree also meet the academic requirements for the license in Iowa, as well as in most other states.

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 3 or 4 cr.

General Program

The M.A. program for the student planning to continue in 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 or replaced by other courses when appropriate for the student's part of study leading to the Ph.D. degree. Students planning to continue in 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 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 adviser may provide for special emphasis through suitable selection of advanced seminars and research areas. Most students will find that multi-special interests fit in one or more of the four listed areas. The establishment of prescribed programs for these areas is not intended to circumscribe the graduate curriculum of the Ph.D. candidate who has specialized goals or interests which are not adequately met by these programs. Individual programs designed to meet special interests and goals are encouraged, provided only that the student's purpose be clearly defined and that he or she presents an appropriate plan of study for their accomplishment.

Courses beyond those included in the departmental offerings are drawn mainly from the areas of physics, engineering,
mathematics, statistics, physiology, neurology, anatomy and psychology.

The nature of the Ph.D. comprehensive examination is determined by 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 adequately in a research and/or academic environment. The evaluation must include both a written and oral performance. Candidates whose seminar 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.

Recommmended Courses

A. Areas of Specialization

Courses, or their equivalents, required for M.A. degree, and the following additional courses:

3120 Fundamentals of Laboratory Instrumentation
3250 General Experimental Phonetics
3250 General Experimental Phonetics
3250 General Experimental Phonetics
3590 Research Speech Pathology
3591 Research Audiology
3592 Research Experimental Phonetics

Statistics beyond introductory course Courses in computer science Courses in phonetics (physiological, learning, motivation, personality)

B. Speech Pathology

Courses listed under A. and:

Seminars in areas of interest Clinical practicum

C. Audiology

Courses listed under A. and:

2254 Psychosocials
2254 Psychosocials Laboratory

2256 Physiology of Hearing Seminars in areas of interest Clinical practicum

D. Speech and Language Science

Courses listed under A. and:

2254 Psychosocials
2256 Psychosocials Laboratory

Courses in linguistics and psycholinguistics Courses in biological and physical sciences and mathematics

E. Hearing Science

Courses listed under A. and:

2254 Psychosocials
2256 Psychosocials Laboratory
2256 Physiology of Hearing
2254 Sensory Processes

Seminaries 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.

Admissions and Appointments

The Department of Speech Pathology and Audiology has requirements for admission and graduate appointment (financial) 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 chair.

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 completed "Information Form" with the Department. This form can be obtained from the Department chair.

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 specified exactly. As a general guideline, however, experience indicates that few students will enroll as undergraduate averages under 3.0 (B) will be admitted into the M.A. program. This does not imply that all applicants with a grade-point average greater than 3.0 will be admitted.

Application Deadlines and Processing

Applications 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. Later 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 application 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.

Applications 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 summer session, July 1 for fall semester, November 1 for spring 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 applications within six weeks after their applications are complete.

Applications for Graduate Appointments

The following information applies to all financial appointments (assistantships, fellowships, internships, etc.) administered by the Department:

Graduate appointments (fellowships) 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.
Core Curriculum

The purpose of the Program’s core curriculum is to provide a rigorous and consistent foundation for the consideration of policy issues, with an emphasis on theory and methods which have proven their usefulness in professional contexts. Because of the generality of the material, it is taught at a moderately high level of abstraction, relying upon examples and exercises to firmly implant the concepts.

Three functions are incorporated into the core:

Social Goals and Normative Criteria Problems in the ethical sector involve a complex balancing of a large number of objectives (environmental quality, decent housing, equity, convenient transportation, etc.) which are seldom simultaneously tenable, so maintaining a clear view while sorting through all the details and side issues demands a very strong normative framework.

Understanding Structural Relationships Besides being able to distinguish better from worse, planners must have a sound operational comprehension of how the world works—the various economic, social, political, administrative, and legal systems through which collective problems are created, transmitted, addressed, and resolved.

Analytic Techniques Analytic techniques are broadly useful in the planning field. Some of these are quantitative (statistics, mathematics, forecasting, estimation, accounting, design of indices, discounting, etc.), some are normative (cost-benefit, budgeting, impact assessment, equity impact evaluation), and some are less formal nonquantitative analytic procedures.

Throughout the program, the emphasis is on the use of simple, flexible methods which are well understood by the student and capable of producing results in a very short time if necessary. Techniques are designed and constructed in the context of, and in response to, each policy problem as it is encountered; there is little emphasis on teaching and cataloging numerical "standards" methodologies for future applications, because such methodologies seldom offer much insight into policy problems.

Statistics

See "Mathematical Science."

Urban and Regional Planning

Program Chair: Douglas L. Lee, Jr.

Faculty: Associate Professor Kenneth Dzuran, James Harris
Assistant Professor (Current) William E. Watkins
Research Associate (Current) Paul G. Ayers, Thomas A. Moore

Diparat, Assistant: W. A. W."

Planning is a diverse and eclectic field, requiring a broad range of talents and skills and depending upon the resourcefulness of the individual planner to apply these skills effectively to the solving of problems in public policy. Emphasis is upon the local government as client or employer, but regional, state, and federal levels also receive major attention, since all are involved in such problem areas as housing, urban land use, transportation, poverty, environment.

The legal program is unusual in that it covers all branches of the field within the same basic framework (represented by the core curriculum), independent of distinctions between physical planning, social planning, economic planning or policy analysis. It treats land-use planning, social program evaluation, and environmental quality as essential elements of the application of the same set of theories and skills.

An independent academic unit administratively located within the Graduate College, the Program has benefited from an opportunity to develop its curriculum and faculty without the constraints imposed by affiliation with another discipline or professional field.

Faculty and students in the planning program at Ithaca bring to each other a wide range of experience and prior education.

Fields represented within the faculty, on the basis of previous training, include planning, architecture, public policy, economics, operations research, geography, economic analysis, public policy, economic and political science, and law. Students typically come from economics, political science, geography, architecture and landscape architecture, environmental sciences, engineering, anthropology, sociology, urban studies and planning, English, biology, history, classics, and philosophy, as well as various fields of the social sciences. The educational experience takes place in informal discussion.

The Program is fully recognized by the American Institute of Planners and the Association of Collegiate Schools of Planning, and meets Institute guidelines for professional education. Graduates are prepared successfully in the job market, serving in positions which challenge their skills and stimulate their interests, whether they choose the more traditional area of local comprehensive plans or transportation planning, or the newer fields such as housing, health planning, or environmental management.

Curriculum Structure

The planning and policy development curriculum comprises a 31-credit, four-semester (plus internship) program encompassing two academic years. Underlying the curriculum is the general philosophy that planners must develop both the theoretical and analytical skills which permit them to identify issues and recommend alternative ways for resolving them, as well as the practical skills (e.g., writing, presentations and analysis, team working) which allow them to function effectively in organizational and political environments and facilitate the development of a political consensus. A competent student frequencies at home with microeconomics, microeconomic theory, quantitative methodology, formal presentations in political bodies, and citizen participation.

2.899 Seminar: Experimental Audiology 2 s.h.

Emphasis, individual study of approaches topic and current research and professional activity. May be repeated for credit. Prerequisite: 3.251.

3.252 Seminar: Glass Audiology 2 s.h.

Emphasis, individual study of current topics in clinical psychology. May be repeated for credit. Prerequisite: 3.251.

3.267 Seminar: Auditory Physiology 2 s.h.

Touching of auditory physiology, specific areas depend on the needs of the group. Permission of the instructor required. May be repeated.

2.897 Research: Speech Pathology 3 s.h.

Prerequisite: consent of instructor.

2.689 Research: Audiology 3 s.h.

Prerequisite: consent of instructor.

2.859 Research: Experimental Audiology 3 s.h.

Prerequisite: consent of instructor.
Core Courses

First Semester
102:202 Urban Development 2 s.h.
102:205 Economics for Policy Analysis 3 s.h.
102:207 History and Theories of Planning 3 s.h.
102:209 Urban Law and Legislation 3 s.h.
Intro to Analytic Methods 3 s.h.

Second Semester
102:304 Collective Decision Making 3 s.h.
102:313 Urban Economic Analysis 3 s.h.
102:314 Public Expenditure and Revenue Analysis 3 s.h.
102:320 Intermediate Analytic Methods 3 s.h.
102:330 Laboratory in Information Systems and Presentation 2 s.h.

Third Semester
102:301 Field Problems in Planning 2 s.h.
Electives (Sectoral major) 9 s.h.

Fourth Semester
Electives (Sectoral major) 12 s.h.

Individual core courses do not align themselves simply with the three functions just described, and very few of the courses serve only one of the functions. A general pattern in the program's teaching is that pedagogical style is matched to the student's progress through the curriculum. Initial courses in the first semester tend to be derived from traditional disciplines (economics, political science, statistics) with student response in the form of exercises and exams; later courses are more synthetic; requiring the student to select, evaluate, organize, and draw conclusions, with more reliance on field problems in real or heuristic settings. Intermediate courses are intended to develop critical judgment and insight in the application of theory, and depend upon case studies and extended examples.

Sectoral Majors

The second year of the program is directed toward the development of an area of concentration, the sectoral major, with nine credits in courses offered in various departments and schools of the University, including the planning program itself.

Currently, there are nine predesignated majors — land use, transportation, housing, social program evaluation, health policy and planning, environmental planning, urban services, regional planning, and urban management — and others can be designed by the student and approved by the faculty.

Joint Programs

Law and Planning

Urban and Regional Planning 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

Urban and Regional Planning 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 and environmental health. Coursework is reduced from four to three years. Separate admission to both academic units is required.

Urban Transportation

The Urban Transportation Research and Training Program is administered by the Center for Urban Transportation Studies of the Institute of Urban and Regional Research. This institute, and its Transportation Center, are a separately organized unit at The University of Iowa. The Center provides transportation certification to students in graduate academic departments at Iowa who satisfactorily complete a prescribed set of interdisciplinary transportation courses. Planning students interested in transportation find this certificate program enhances the value of their departmental major in transportation. A separate admis- sions process is maintained for joint candidates. For particulars, see the Urban Transportation section of this Catalog.

Social Work

A concurrent studies program is offered between Urban and Regional Planning and the University of 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 semester hours in social
Urban Growth in Developing Countries

Program coordinator: Michael L. Incduly

A nongraduate graduate program of interdisciplinary and cross-cultural seminars and courses focused on problems of development in Third World countries is offered through the Center for Development Studies within the Institute of Urban and Regional Research. Intended to facilitate and coordinate interdisciplinary instruction and research, the program is available to graduate students from departments throughout the University.

In addition to a number of development-related courses offered in specific departments, the program includes a graduate course, Urban Growth in Developing Countries, in the departments of Anthropology, Economics, Geography, Political Science, Social Work, Sociology, and Urban and Regional Planning. Taught by an interdisciplinary team, the course introduces students to the analysis of urban problems in developing countries from a cross-cultural and interdisciplinary perspective.

A graduate workshop is intended to provide a forum for graduate students and faculty members from a variety of departments to meet regularly to discuss problems of mutual interest. Additional information may be obtained by contacting the program coordinator.

Urban Transportation

A graduate program consisting of both education and research is offered by the University of Iowa's Center for Urban Transportation Studies. The program encompasses the interactions of an urban society with the various systems of land travel and freight transportation. Active participation of nine academic disciplines allows the student to assemble a program spanning physical, economic, legal, social and institutional elements. It is this multi-disciplinary exposure which distinguishes this program from the more traditional graduate urban transportation programs.

An effort is made to integrate issues of economic evaluation of alternative investments, environmental quality, traffic demand, urban spatial structure, land use impacts of transportation, travel management and planning, and distributionally into a technically sound synthetic framework.

With few exceptions, graduates of the program are currently employed in a variety of functions in the transportation field.

The Graduate Program in Urban Transportation draws upon courses offered by participating departments and is coordinated by the Center for Urban Transportation Studies within the Institute of Urban and Regional Research. An M.S. degree in Urban and Regional Planning has been authorized by the Graduate College of The University of Iowa, and is documented on the student's transcript. Students admitted into the program participate in conjunction with the established degree (M.A., M.S., M.B.A., Ph.D., or J.O.) 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

The Urban Transportation Program is not a degree-granting program, but instead issues a transportation certification to students, enrolled in degree-granting departments, which may be used in conjunction with a course of study. The student should design a course of study in consultation with his/her advisor or the director of the Urban Transportation Program. The course of study must be approved by the Urban Transportation Program Executive Committee prior to admission to the program.

The course of study should consist of 18 hours of transportation courses and 12 hours of related courses. Twelve of the 18 hours must be transportation courses, and the remaining six hours must be in transportation-related courses outside the student's discipline. Students must be enrolled in the Transportation Program for a minimum of one year (two semesters) to receive a transportation certificate. To secure knowledge of basic transportation planning and sufficient depth in a special area, the student must complete the core courses and fulfill one option as part of the 12 hours of transportation. The core consists of three required courses:
102:111 Introduction to Urban Transportation (can be taken for students with prior training in or experience in transportation) #72727 Urban Transportation Planning 102:280 Transportation Policy and Planning

In addition, students must enroll in 102:311 Transportation Program Seminar each semester they enroll in the Urban Transportation Program. Credits for 102:311 do not count toward the 18-credit-hour requirement. Two options are available to Transportation Program students. 128:281 Problems in Transportation and Land Use must be taken to complete the transportation policy option. 583:175 Transportation Systems Design must be taken to complete the transportation design option.

To achieve the interdisciplinary goal of the Urban Transportation Program, the student should make every attempt to take a course from all Transportation Program faculty, as they represent the various disciplines germane to transportation planning.

Students are strongly encouraged to gain practical experience in transportation research by completing a thesis or major project, either in conjunction with a course (such as 102:281) or a research assistantship. All students should ensure that the executive committee has a current course of study approved and on file. Students currently enrolled in the Transportation Program should review their course of study with the program principles in mind to determine whether alterations are necessary.

Research

Problems of small urban systems and low density systems are examined in research projects. Through a combination of coursework and research activities—surveys, design, and evaluation of small community systems—design and monitoring of small community systems will develop skills and receive a project-oriented educational experience in areas such as travel behavior, travel systems design, traffic analysis, and impact evaluation.

Urban and regional laboratories available for the learning process (Cornell, Iowa City, Cedar Rapids, Quad Cities and Johnson County) provide an attractive range of smaller 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; allude 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 $250 per month to the academic year to full-time research assistantships $500 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 $500 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 restating the nature and extent of the applicant's interest in urban transportation.

Women's Studies

Program Chair: Susan M. Heisey

The Women's Studies Program is a multidisciplinary program engaged in developing a body of knowledge about women and institutionalizing that knowledge within the university community. The term "women's studies" does not convey segregated education for women but emphasizes teaching and research about women which is of intrinsic interest to all students. This new academic dimension in education forms a cumulative pattern of learning about women and supplements neglected areas of study in the existing curriculum, raises provocative intellectual questions about the human condition as a whole, and opens wider the quest for truth.

For information on faculty members in varied departments who will direct graduate study, contact the Women's Studies Program, 305 English Philosophy Building. For detailed descriptions of the courses listed below, consult the appropriate department, school, or program in this Catalog. Since the topics of some courses change from year to year, students should refer to the schedule of courses for pertinent information.

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. Annually classes are taught at the Women's Resource and Action Center.

American Studies

45:128 The Black Woman in American Studies

American Studies

Undergraduate students may elect varied courses from the disciplines listed below or may count an area of concentration in Women's Studies within the Bachelor of Science degree. Graduate students may choose an area of concentration within existing academic disciplines or may create an interdisciplinary prospectus. For information on faculty members in varied departments who will direct graduate study, contact the Women's Studies Program, 305 English Philosophy Building. For detailed descriptions of the courses listed below, consult the appropriate department, school, or program in this Catalog. Since the topics of some courses change from year to year, students should refer to the schedule of courses for pertinent information.

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Program Chair: Susan M. Heisey

The Women's Studies Program is a multidisciplinary program engaged in developing a body of knowledge about women and institutionalizing that knowledge within the university community. The term "women's studies" does not convey segregated education for women but emphasizes teaching and research about women which is of intrinsic interest to all students. This new academic dimension in education forms a cumulative pattern of learning about women and supplements neglected areas of study in the existing
A one-semester introduction. 37.5 Principles of Animal Biology, stresses the major concepts and is ordinarily the first course taken in the Zoology Department. MAIRS must also take basic courses in genetics usually immediately following the introductory course, evolution and cell physiology. Beyond this "core" curriculum, the student has a virtually unrestricted choice of 120-credit and above. Students are required to take courses in zoology or a minimum of 33 semester hours. A student may substitute 100-level coursework in other areas of natural science or in mathematics (excluding the specific course requirements listed below) for up to eight hours of the 33-hour total in zoology. Courses required for a B.A. or B.S. degree in zoology are:

- In other departments:
  - BW10 Expository Writing 3 s.h.
  - ZM1-16 Calculus for the Biological Sciences 3 s.h.
  - ZM1-25 Calculus I 4 s.h.
  - ZM4-15 Principles of Chemistry I-IV 6 s.h.
  - ZM16 Elementary Chemistry Laboratory 2 s.h.
  - ZM12 Organic Chemistry I 3 s.h.
  - SP120 The Chemistry of Biological Materials 3 s.h.
  - ZM17-18 Introductory Physics I-II 6 s.h.
  - ZM11-12 College Physics 8 s.h.
  - Elective zoology, other science, mathematics 15-18 s.h.

Graduate Programs

The graduate programs in the Department are designed to prepare students for different kinds of professional activities, including teaching at various levels of education or government appointments, in other kinds of professional service, and in the areas of professional service. The M.S. degree requires a major in research and the M.B. degree requires a minor in research. Credit can be obtained for courses and the student is required to complete the requirements for the degree in a minimum of three years. After the thesis is accepted, the candidate must pass an oral examination to qualify. Students must achieve a minimum of 33 semester hours in zoology and other sciences beyond the required minimums.

Honors

Students in the college-wide Honors Program may earn an Honors degree in zoology by completing a total of at least six semester hours in 37-188 Honors Laboratory Research, 37-187 Honors Readings in Zoology, and 37-188 Honors Seminar in Zoology.

Introduction to Research

The Department offers membership in a small, active group of undergraduates with common interests, and association with one of the Department's research groups. Experiments, running discussion of current research, the study of specialized topics and attendance at research activities are outside of the curriculum and the research activities can be obtained within or outside the scope of the Honors Program and may be pursued in summer as well as during the academic year.

Graduate Programs

The graduate programs in the Department are designed to prepare students for different kinds of professional activities, including teaching at various levels of education or government appointments, in other kinds of professional service, and in the areas of professional service. The M.S. degree requires a major in research and the M.B. degree requires a minor in research. Credit can be obtained for courses and the student is required to complete the requirements for the degree in a minimum of three years. After the thesis is accepted, the candidate must pass an oral examination to qualify. Students must achieve a minimum of 33 semester hours in zoology and other sciences beyond the required minimums.
examination based mainly on the work reported in the thesis and on relevant subject material.

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 related sciences, these courses to be determined in consultation with the student's thesis committee and tailored to fit the student's background and career goals. Credit received in courses at the 100-level or above, with the exception of courses in zoology required to make up deficiencies revealed by the diagnostic examination (see above), may be included in the 34-hour minimum if approved by the advisory committee. On completion of the hours requirement and acceptance of the research report by the student's faculty sponsor, the student must pass a written examination covering his or her graduate program in zoology, including the area of the student's report.

The M.S. Degree in Biology

Thirty semester hours of graduate credit are required of all students who earn this degree with a thesis. Ordinarily six to eight semester hours are assigned to thesis research and writing, eight to twelve semester hours to graduate courses in zoology, eight semester hours to graduate courses in botany and the remaining semester hours to free electives. Following acceptance of the thesis, the candidate must pass a written examination covering graduate programs in botany and zoology. This is followed by an oral examination based mainly on the work reported in the thesis. The Botany and Zoology departments offer a 34-semester-hour program leading to the M.S. in biology, without a thesis.

The Ph.D. Degree in Zoology

For each Ph.D. degree candidate a departmental committee is formed, of which the candidate's faculty sponsor is chairman. The committee is charged with establishing the course and competency requirements which the candidate must meet. The background of the candidate, and his or her current and prospective research interests, are taken into consideration. The committee also establishes that portion of the formal coursework or particular proficiencies (such as ability to read certain modern foreign languages) which will be demanded of the student before admission to the comprehensive examination. In this examination the candidate is expected to demonstrate knowledge of the fundamentals of zoology and mastery of one or two specialized fields. Usually the student has demonstrated some ability in research through the M.S. thesis, or through equivalent research work. In his or her research, which culminates in the doctoral dissertation, all of the requirements for a scholarly piece of work will be demanded. The acceptance of the thesis by the Department will be followed by the final oral examination over the thesis itself and the specialized field which it represents.

Graduate Student Awards and Aids

Nearly all of the graduate students in the Department receive some support, the largest portion from teaching assistantships, scholarships and research assistantships provided by the University or by individual research grants administered by faculty members. Stipends and full tuition are available in federally-funded developmental biology, cell and molecular biology, and neurobiology training programs administered by the Department.凡 is also open to postdoctoral fellows. Support through interdisciplinary programs in genetics (predoctoral) and cancer (postdoctoral) 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 reviewing committee considers them eligible. The Department provides some support each summer for students who arrange for training at marine laboratories on the coast, or at other appropriate summer stations. Most assistantship and other appointments for the following academic year are filled by April 1, but opportunities occasionally exist for appointments at other times, including the beginning of the second semester. Requests for appointment should include clear statements of research interest. If such interest has been defined at the time of application.

Orientation

Prior to registration in August, all new graduate students take a diagnostic examination covering topics in development biology, genetics, physiology with an emphasis on cell physiology, evolution and ecology. On the basis of examination results, the Department reserves the right to require students to take specific courses to enhance their background in the area. These requirements are made to ensure breadth of background for specialized graduate work. Any deficiencies in mathematics, chemistry or physics are to be made up during the first year.

Applicants for a degree other than biology or zoology may request modification of a student's requirements. This is the provence of the student's degree committee.

Admission

An applicant for graduate study should have a grade-point average of 3.0 and a Graduate Record Examination score of 1300. The Graduate Record Examination score should also be submitted. Although the Department prefers applicants who have completed undergraduate programs much like its own, it will consider applicants with other backgrounds, such as biophysics, botany, 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. The Department and its facilities are available to the scientific community. The Department depend heavily upon the availability of living animals, and the Department is provided with animal care facilities for mammals, birds, reptiles, amphibia, fishes, invertebrates, including protocols. Special facilities exist for research with viral, fruit flies and marine organisms. At least 15 walk-in and research 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

LIBERAL ARTS/Zoology

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Courses

Primarily for Undergraduates

(Usually the courses numbered 371 through 374 may not be counted toward the Zoology major.)

373 Principles of Animal Biology 5 s.h.
Biology of living organisms, metabolism, and regulation, reproduction, development, genetics, ecology, evolution. Introductory college chemistry. Prerequisite: 371 or 374 strongly recommended. Should be taken by transfer students who have not had an advanced course in zoology. Prerequisite for all courses in the Department numbered 375 and above.

373 Tissues in Biology 1 s.h.
Histology and histogenesis; assignment limited to seven hours, counselors required to choose sections. Prerequisite: 373 or permission of instructor. Prerequisite for premedical majors.

375 Principles of Evolution 3 s.h.
Nature, ancestry, our mechanisms of evolution. Prerequisite: 371 or 374 strongly recommended. Prerequisite: 373 or consent of instructor.

376 Field Studies: Fresh Water and Marine Biology 2 s.h.

376 Botanical and Ecological Evolution 2 s.h.

A course for nonmajors majoring in non-science majors requiring 60% of the literature. The literature and the environment problems created during the course. Examples are drawn from throughout the animal kingdom to illustrate fundamental processes and their evolutionary traits. No prerequisites.

376 Introduction to Animal Behavior 2 s.h.
Survey of principles and concepts in animal behavior and their implications for humans. Interest for nonmajors only. Prerequisite: 376 or permission. Prerequisite: 373 or consent of instructor.

378 Principles of Human Genetics 4 s.h.
Human beings, species and populations, genetical aspects of normal and abnormal traits, human behavior, sex determination, behavior, and inbreeding. Lectures and discussions. Prerequisites: introductory course in biology.

For Undergraduates and Graduates

378 Introductory Zoology 4 s.h.
Lectures, readings, laboratory on general cell function, nutrition, catabolism, development, and population. Prerequisites: 373 or equivalent.

378 Introduction to Developmental Biology 3 s.h.
Lectures on biochemistry, cell physiology, electron microscopy, biochemistry of embryos and larvae, and summary topics in embryology. Prerequisites: 373, 376, or 414.

378 Cell Physiology 4 s.h.
This course is co-taught by: Prerequisites: 373 or 374 strongly recommended. Should be taken by transfer students who have not had an advanced course in zoology. Prerequisite for all courses in the Department numbered 375 and above.

379 Developmental Biology Laboratory 2 s.h.
First half introduction to experimental approaches in developmental biology; covers a variety of vertebrate and invertebrate approaches and a variety of experimental approaches. Prerequisite: 378.

379 Vertebrate Zoology 4 s.h.
Zoogeography and systematics. Evolution and phylogeny of the vertebrates. Prerequisites: 373 or equivalent. Prerequisite: 371 or equivalent.

379 Comparative Zoology 2 s.h.
Zoogeography, systematics, and evolution of the vertebrates. Prerequisites: 373 or equivalent. Prerequisite: 371 or equivalent.

379 Comparative Vertebrate Anatomy 2 s.h.
Human. Prerequisite: 373 or equivalent. Prerequisite: 371 or equivalent.

379-270 Cell Biology 2 s.h.
Zoology and the evolution of the vertebrates. Prerequisites: 373 or equivalent. Prerequisite: 371 or equivalent.

J. Lake Wide Laboratory Courses in biology and aquatic biology offered in the on-campus work in ecology. See "Lake Wide Laboratory."

Special Faculty Strengths

A Biological Sciences Development Award from the National Science Foundation has enabled that each faculty member has sufficient research space for personal needs and for the needs of the graduate students carrying out thesis research. Each faculty member carries an active research program; not only are students and faculty of values in the breadth and variety of advanced courses and seminars offered.

379 Comparative Vertebrate Anatomy 2 s.h.
Designated as an initial faculty and laboratory experiences in physiology, emphasis on current status of physiology and zoology. Prerequisite: 373 or equivalent. Prerequisite: 371 or equivalent.

379-270 Cell Biology 2 s.h.
Zoology and the evolution of the vertebrates. Prerequisites: 373 or equivalent. Prerequisite: 371 or equivalent.

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Courses Primarily for Graduates

37.258 Molecular Ecology Seminar 6 s.h.
Readings, reports, discussions on topics of current interest, with implications for field of genetics and development. May be repeated. Prerequisites: consent of instructor.

37.257 Cell and Molecular Development 6 s.h.
Internal discussions of topics of current interest in molecular and developmental biology. Prerequisites: consent of instructor.

37.216 Genetics Seminar 0-6 s.h.
Lectures, discussions, seminars on selected topics in genetics. May be repeated. Prerequisites: 37.170 or consent of instructor. Same as 37.120, 37.121, 37.125.

37.217 Seminar: Zoology 6 s.h.
Weekly lectures on current research; invited speakers.

37.210 Introduction to Electron Optical Research Techniques 6 s.h.
Lecture and laboratory on methods of tissue fixation, embedding, ultrathin sectioning and staining; theory, use, maintenance of electron microscopes; associated photographic techniques. Prerequisites: 37.113 and consent of instructor. Same as 37.215, 60.215. 61.108, 61.215.

37.246 Seminar: Embryology 2 s.h.
Selected topics of current research relevant in basic and applied or experimental research. Prerequisite: 37.216 and consent of instructor.

37.247 Seminar: Heredity and Behavior 2 s.h.
Readings, discussions, seminars on topics concerning hereditary and behavioral evolution. Prerequisites: 37.216 and consent of instructor.

37.210 Seminar: Theoretical Ecology 2 s.h.
Current concepts in ecology. Prerequisites: 37.113 or consent of instructor.

37.235 Advanced Techniques in Light Microscopy 2 s.h.
Theory of modern techniques in light microscopy, with some demonstrations, including bright field, dark field, phase contrast,Nomarski, fluorescence.

37.237 Seminar: Ecotaxonomy 2 s.h.
Discussions, readings in current evolutionary theories.

37.446 Ecological Research, Analysis, and Writing 2 s.h.
May include experimental design, hypothesis testing, sampling methods, data analysis, simple modeling, and scientific writing. Examples may be selected from and unique ecological theories, empirically problems, or write a scientific paper or thesis proposal. Prerequisites: graduate standing and consent of instructor.

37.250 Seminar: Behavioral Zoology 2 s.h.
Discussions, readings, reports on topic relating to interaction between behavior and ecology in populations and ecosystems. Prerequisites: course in ecology and behavior, or consent of instructor.

37.250 Seminar: Developmental Genetics 4 s.h.
Lectures, readings, discussions on gene, environmental and behavioral interaction. Prerequisites: 37.110, 37.113.

37.263 Seminar: Behavioral Neurobiology 1-6 s.h.
Prerequisites: 37.170, 37.175.

37.265 Seminar: Human/Behavioral Sciences Seminar 0-6 s.h.
course student lecture discussion of current literature in research areas falling on neuroendocrine and behavior. Same as 60.126, 71.206.

37.271 Seminar: Cell: Physiology 2 s.h.
Current topics in physiology studied by critical reading of the scientific literature. May be repeated for credit. Prerequisites: 37.110 or consent of instructor.

37.272 Seminar in Cellular and Molecular Biology 1 s.h.
Introduction to research and development in molecular and developmental processes, models and theories. For students in Cellular and Molecular Biology Research Training Program and others interested, with consent of the instructor. May be repeated for credit. Same as 60.272, 61.272. 71.272. 72.272. 99.272.

37.291 Seminar in Neurobiology 1 s.h.
Presentations of current literature. Prerequisites: consent of instructor.

37.292 Readings in Dynamic Neurotransmission 2 s.h.
Current research on the biochemistry, anatomy and physiology of neurotransmission in mammalian and non-mammalian systems. For students in introductory course in chemistry, or consent of instructor.

37.294 Advanced Techniques in the Neurosciences 1 s.h.
In-depth study and independent course presenting neurological techniques used by different neurological groups throughout the University. Prerequisites: consent of instructor. Same as 60.294, 61.294, 71.294, 72.294.

37.296 Advanced Electron Microscopic Techniques 4 s.h.
Continuation of 37.215, but emphasizes experimental aspects of electron microscopy, including negatives staining, shadow casting, crystallographic and autoradiographic applications. Prerequisites: 37.215, anatomy and consent of instructor.

37.299 Problems in College Biology 1 s.h.
Discussion of theoretical and practical problems. Restricted to graduate students.

37.301 Research: Zoology

37.393 Independent Study in Zoology

College of Business Administration

The College is organized into four academic departments: Accounting, Business Administration, Economics, and, jointly with the College of Education, the Department of Business Education. The undergraduate and graduate programs of the College are fully accredited by the American Assembly of Colleges Schools of Business. Research and executive development activities are supported by the Center for Labor and Management, Institute for Insurance Education and Research, Institute for Economic Research, and Industrial Relations Institute.

Undergraduate Study

The College offers the Bachelor of Business Administration degree in all four departments. The B.B.A. student completes background studies either in the College of Liberal Arts at Iowa or in another institution and usually enters the College of Business Administration as a junior.

Program Requirements

To assure national breadth and to permit limited specialization at the baccalaureate level, Iowa's B.B.A. curriculum requires 120 semester hours for graduation, with at least 48 hours in business courses and at least 48 hours in nontbusiness courses. Limited specialization is affected through the student's option of a designated major or areas of concentration.

The last 30 (or 45 of the last 60) semester hours must be earned in residence at Iowa following admission to the College of Business Administration. If at least 24 semester hours of credit in courses offered by the College of Business Administration, and at least eight semester hours of credit in the student's major or six semester hours in each area of concentration, must be earned at Iowa.

A student who has not satisfied the quantitative methods, psychology/sociology, accounting and economics requirements when admitted to the College must undertake them in the first enrollment and complete all successfully completed, in general, six hours of coursework attempted at Iowa, on all business and economics coursework attempted, on all business and economics coursework attempted at Iowa, on all coursework attempted in the major or area of concentration, and on all coursework attempted at Iowa in the major or area of concentration.

Common Requirements

The B.B.A. candidate must satisfy these minimum common requirements: * Rhetoric/communications 6 a.h.  * Historical-cultural 6 a.h.  * Literature 6 a.h.  * Natural sciences (excluding mathematics) 3 a.h.  * Psychology or sociology 6 a.h.  * Quantitative methods 6 a.h. 6A.1 Introduction to Financial Accounting 3 a.h. 6A.2 Introduction to Managerial Accounting 3 a.h. 6E.1 Principles of Economics 4 a.h. 6E.2 Principles of Economics 4 a.h. 6B.11 Financial Management 3 a.h. 6B.31 Introduction to Marketing 3 a.h. 6B.47 Introduction to Law 3 a.h. 6B.61 Administrative Management 3 a.h. 6B.72 Computer Analysis 3 a.h. Required course in business policy 1 a.h.

*Consult the college's undergraduate office concerning required and alternative methods for meeting the requirements listed above.

In addition, the student must complete a major area of study or two areas of concentration. The requirements for a specific major are established by the departments of the college.

An area of concentration consists of a combination of related courses, selected by the student and approved by the adviser, which are designed to meet a specific academic or career objective. Final approval...
will be made by the dean of the college. Each area must consist of at least three courses (3 s.h.) and two courses in each area must be taught by the College of Business Administration.

Credit by Examination

Students may earn up to 32 semester hours of credit by examination. Selected tests 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 College. Information on the CLEP examinations is available from the Liberal Arts Advisory Office.

Maximum Schedule

Course schedules of more than 18 semester hours for a semester or nine for a summer session require approval of the approval 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 16 semester hours of pass/fail courses toward the last 60 semester hours of coursework. Courses with the BA, BB or EE prefix 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, an earned grade of C or above is recorded as a P; otherwise, the grade earned (D or F) is recorded.

Second-Grade-Only Option

Unless obvious regression is involved and with permission of the assistant dean, a student may be permitted to select 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 10 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 3.55 grade-point average (A = 4.0) in all college-level courses undertaken, including all courses undertaken at Iowa State and all business and economics courses. The applicant should also have satisfied the following common requirements: rhetoric, communication, psychology, philosophy, quantitative methods, accounting, and economics, 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 lower division courses at Iowa.

Registration 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 probationary admission.

Interdepartmental Graduate Programs

Master of Business Administration

The Master of Business Administration (M.B.A.) program is designed for individuals pursuing for professional administrative careers in the business or public sector. The program gives the individual a means of enhancing career opportunities and at the same time provides industry and government with the professional personnel required in a dynamic economy.

The curriculum is designed for candidates whose undergraduate majors were in liberal arts, science, engineering or other nonbusiness areas, as well as for graduates of schools or colleges of business administration. For the student who has taken prior business administration courses, the number of semester hours of coursework are required. For the student with prior coursework in business administration, certain of the foundation courses may be waived. However, in all cases a minimum of 33 semester hours of graduate work is required. The following foundation courses, totaling 24 semester hours, may be waived on the basis of exemption examinations or equivalent coursework of high quality:

- 8A:162 Financial Accounting 3 s.h.
- 8B:143 Computer Methods—M.B.A. 2 s.h.
- 8B:144 Managerial Finance—M.B.A. 2 s.h.
- 8B:165 Management of Organizations—M.B.A. 2 s.h.
- 8B:166 Marketing Management—M.B.A. 2 s.h.
- 8B:167 Quantitative Methods—M.B.A. 3 s.h.
- 8B:168 Society, Law and Business—M.B.A. 2 s.h.
- EE:100 Police, Employment and Production Theory 2 s.h.
- EE:190 Consumer and Firm Behavior 2 s.h.
- EE: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 topical interests associated with his or her own career objectives. In addition to courses required of all students, each individual selects an area of concentration and, with the assistance of the M.B.A. advisor, selects at least six semester hours of coursework in that area.

The following are the core course requirements, totaling 33 semester hours:

Integrated Core (18 s.h.):

- 8B:214 Managerial Accounting—M.B.A. 3 s.h.
- 8B:260 Administrative Science—M.B.A. 3 s.h.
- 8B:265 Administrative Policy—M.B.A. 3 s.h.
- 8B:271 Statistical Methods—M.B.A. 3 s.h.
- 8B:273 Managerial Economics Theory—M.B.A. 3 s.h.
- 8B:276 Operations Research in Business—M.B.A. 3 s.h.

Applied Core (9 s.h.):

- Three of the following, or two of the following and an approved elective:
- 8B:215 Financial Policy and Decisions—M.B.A. 3 s.h.
Doctor of Philosophy in Business Administration

The Ph.D. program is intended for individuals preparing for faculty positions in university or collegiate schools of business administration and for business or government careers as research directors, staff specialists and consultants. The program is sufficiently flexible to accommodate specialization according to the student's interests, background and objectives.

Foundation Areas

The purpose of the foundation areas is to develop competency in research methods and to provide the background needed for study in any sequence of more specialized courses. The student should complete the requirements in the foundation areas before proceeding to the specialized areas. The requirements in the foundation areas may be satisfied by passing a qualifying examination or by successfully completing each course. The Ph.D.-level courses required are:

- Econometrics I 3 s.h.
- Microeconomics I 3 s.h.
- Macroeconomics I 3 s.h.
- Statistics and Quantitative Analysis

Graduate Admission

See "Graduate College."
The Industrial Relations
Institute

The Industrial Relations Institute is designed to bring faculty and students together with interests in industrial relations for the purposes of curriculum, research, and to conduct continuing education seminars and workshops for practitioners in the field of Industrial relations. Faculty associated with the Institute are drawn from the departments of Business Administration and Economics and from the Center for Labor and Management.

Accounting

Department Chair: E. Baross
Degree offered: B.B.A., M.A.

The function of accounting is to provide information to decision-makers. It is essential that accountants be able to express their thoughts in an orderly, logical manner, in words as well as in figures, and that they be able to relate well to their associates and to customers or clients. Success in professional accounting also requires the ability to recognize the merits of new ideas and apply them to the improvement of current practice. The Professional Program in Accounting at least 12 semester hours of study which develops the technical proficiency and the conceptual, analytical, and communication skills necessary to succeed in the accounting profession. The program prepares candidates for careers in all areas of accounting, including the necessary educational qualifications for professional examinations such as the CPA, CIA, and CMA.

Students ordinarily enter the Professional Program in Accounting after three years of professional work which encompasses business and the liberal arts, and which satisfies the general education requirements of the University and the College of Business Administration. The program is also open to students with undergraduate degrees. The degree is not a business major; graduates of the program have included, for example, students with bachelor's degrees in history and engineering.

Accounting Programs

A flexible two-year program is available to both graduates and undergraduates.

Plan I (for the B.B.A. student)

As a candidate for the B.B.A. with a major in accounting, a student in the College of Business Administration must enter the Professional Program in Accounting after completing 50 semester hours of coursework, including the common requirements for the B.B.A., 69-70 Quantitative Analysis and 69-71 Statistical Analysis.

First Year

**8A:1 Introduction to Taxation 3 s.h.
6A:130 Cost Accounting for 3 s.h.
Management Analysis and
Control

**8A:131 Financial Accounting I 3 s.h.
6A:132 Financial Accounting II 3 s.h.
6A:144 Auditing 3 s.h.
6A:145 Financial Accounting III 3 s.h.
**6E:03 Microeconomics 3 s.h.
6B:145 Law and Business 3 s.h.
**8B:161 Individual Behavior in 3 s.h.
Organizations or
6B:118 Intermediate Financial
Management 4 s.h.

**8B:176 Operations Management 3 s.h.

*Must be completed during the spring 3 s.h.
semester of the junior year or the following
summer.

**May be taken during the junior year.

After completing first-year coursework, the student can receive the B.B.A. in accounting.

A student entering with a B.A. in accounting from another university, usually required to take only the second year of the professional program.

Second Year

6A:230 Accounting Theory I 3 s.h.
6A:231 Accounting Theory II 3 s.h.
Graduate Accounting electives 9-12 s.h.
Graduate electives 12-15 s.h.
6A:250 Accounting Issues Seminar 0 s.h.

Upon satisfactory completion of the 30-hour requirement for the second year, the student receives the Master of Arts degree in accounting.
BUSINESS ADMINISTRATION

The Undergraduate Program

The purpose of this undergraduate program in business administration is to give the student a general overview of business with its position in and relationship to society. The program deals with business theory, decision-making, management systems generally, rather than specializing in a particular facet of business organization. Designed to teach students about business rather than how to conduct business, the program's behavioral approach strikes the concept of human interaction in business and society at large.

Students qualifying with the B.B.A. in business administration have a wide range of career choices. The largest group go into marketing. Many are employed by financial institutions and in junior management positions. Others enter government service and other nonbusiness fields requiring administrative skills. Many continue their studies toward advanced degrees. There is considerable latitude within career areas. For example, the avenues open to a business administration graduate with a major in marketing include advertising and promotion, costing, credit, development and improvement, product distribution.

The student of business administration can choose between two options in fulfilling the degree requirements.

In addition to courses specified in the Colleges' general statement, students can select two three-course sequences (usually 9 s.h.) in areas of concentration approved by a faculty advisor. Two of the courses in each area must be offered by the College of Business Administration.

Or in addition to courses outlined in the general statement, students can elect a major in one of the following areas:

Finance
68:11 Statistical Analysis
68:11 Investment
68:113 Financial Markets and Institutions
At least two semester hours of accounting beyond the basic core is also required, followed by any two of these:
68:112 Security Analysis
68:114 Commercial Banking
68:118 Intermediate Financial Management

Financial Economics
68:111 Investments
68:113 Financial Markets and Institutions
68:173 Managerial Economics
68:103 Microeconomics

These are to be taken by two of these:
68:114 Commercial Banking
68:117 Money and Banking
68:119 Economics of the Government Sector
68:141 Industrial Organization

Insurance
68:20 General Insurance
68:121 Property and Liability Insurance
68:125 Life and Health Insurance

At least one of the following:
68:123 Public Economic Security Programs
68:124 Risk Management

Six additional hours of course specified by the student's advisor.

Industrial Relations
68:158 Personnel Management
One of the following:
68:151 Employment Relations
68:152 Labor Relations/Law
68:153 Collective Bargaining
68:154 Employment Relations in the Public Sector

One of the following:
68:158 Manpower Policy and the Development of Human Resources
68:111 Labor-Manpower Economics
68:158 Current Issues in Industrial Relations

Any of the eight courses above not previously chosen, or others designated by area faculty.

Administrative Management
68:158 Personnel Management
68:161 Individual Behavior in Organizations
68:158 Group Behavior in Organizations
68:158 Design and Management of Organizations

One of the following:
68:168 Managerial Information Processing and Decision Behavior
68:168 Search Problems in Administrative Management

Management Systems
68:71 Statistical Analysis
68:150 Management Information Systems

One of the following:
68:168 Managerial Information Processing and Decision Behavior
68:178 Operations Management
68:177 Simulation Methods
68:176 Topics in Operations Management

A programming language course approved by the student's advisor.
Master of Arts

The M.A. in Arts program in business administration is designed for the student who seeks an opportunity for specialization and/or research experience. It is assumed that the student has an undergraduate degree in business, or the equivalent. The student without the will be required to complete at least 24 semester hours of additional coursework. The program is available on both a thesis and nonthesis basis. Whereas the student aspiring to be a business or public administrator would normally seek the M.B.A. degree, the M.A. student might be considering a research or teaching career if he/she is interested in a business or employment in a business-related position requiring specialized knowledge. A student may take the M.B.A. degree as he/she proceeds toward a Ph.D. degree.

M.A. program is flexible to permit specialization according to the student's interests and objectives. The major may select a major in finance, insurance, marketing, administrative studies, management systems, industrial relations, or other.

Courses

Primarily for Upper-Division Undergraduates

68:260 Cooperative Innovation Training Assignment 9 s.h.
68:260 Financial Management 3 s.h.
68:260 General Insurance I 3 s.h.
68:260 Insurance and Risk Management 3 s.h.
68:260 Risk Management 3 s.h.
68:260 Theory of Risk and Risk Bearing 3 s.h.

Courses for Undergraduates and Graduates

68:181 Budget Management 3 s.h.
68:181 Business Administration 3 s.h.
68:181 Business Ethics 3 s.h.
68:181 Business Law 3 s.h.
68:181 Business Policy 3 s.h.
68:181 Business Planning 3 s.h.
68:181 Business Strategy 3 s.h.
68:181 Corporate Finance 3 s.h.
68:181 Economic Analysis 3 s.h.
68:181 Economic Development 3 s.h.
68:181 Economic Development 3 s.h.
68:181 Economic Growth 3 s.h.
68:181 Emerging Markets 3 s.h.
68:181 Environmental Economics 3 s.h.
68:181 Financial Management 3 s.h.
68:181 Financial Markets and Institutions 3 s.h.
68:181 Financial Planning 3 s.h.
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68:120 Topics in International Business 3 sh.
Taught to students having special interests in International aspects of business. This course covers a few topics in depth in an established course, e.g., multinational industry studies, financing international companies, etc.
68:184 Predictive Planning and Control 3 sh.
Mechanics of setting the limits, regulation and levels of products in the individual firm. Prerequisite: 68:08.
68:183 Microeconomics and New Business Formation 3 sh.
Considerations of the entrepreneur, problems of and motives of starting the decision to go into business for self. Development problems of a small business for appraising a new business case studies. Prerequisites: 68:06 reading.
68:233 Managing the New or Small Business 3 sh.
Role of skill in dealing with the economy. Management of the ongoing small business, and problems confronting the entrepreneur in the small enterprise. Prerequisite: senior standing.
68:180 Supermarket Course 3 sh.
Available for special courses not regularly offered.
M.B.A. Foundation Courses
(Cost is 2856 to graduate students and seniors in the "3-4" plan)
Use of computers in business management: concepts and programming language and word-processing software (PARC, library programs, systems design, etc.). Data base structures.
68:184 Managerial Finance-M.B.A. 3 sh.
Goals of financial management, characteristics of business instruments and markets, cost of funds and disbursals of resources, working capital management. Prerequisite: 68:180.
Facts and problems of planning and application of accomplishing organizational goals through allocation of resources, organization design and change, leadership techniques, control mechanisms, organizational behavior.
Marketing—distribution to business and society; environmental factors in marketing decision and tactical market forces in the marketing management.
Quantitative methods applicable to business and economic problems: calculus, linear algebra, probability to production, marketing, finance and management.
68:186 Law, and Ethics M.B.A. 3 sh.
The relationship of law and ethics in the determination and use of values. The legal and ethical aspects of business, with emphasis on the intellectual tools of participating in an industrial society.

Primarily for Graduates
Individual guided-readings in selected topics in business administration.
The one-hour meeting for 4-6 hour paper. Prerequisite: consent of instructor.
Methods and social problems facing the country—race, ecology, lifestyle, etc. primary emphasis on industry's role with respect to job causes and solutions valuable role of government and civilian groups.
68:212 Investment Management 3 sh.
Principles applied to policy, administered problems and cases, decision models current and fixed asset administration, raising funds, capital costs, capital budgeting, dividends, mergers. Prerequisite: 68:184 or equivalent.
Organization, role and regulation of capital markets. Financial instruments and price theories of financial instruments with other academic developments. Prerequisite: consent of instructor.
68:217 Portfolio Theory and Planning 3 sh.
Examination of modern mathematical methods relating to management of portfolio or financial institutions: topics include portfolio models, refinement measurement, risk and portfolio construction. Prerequisite: consent of instructor.
68:218 Senior in Finance 3 sh.
Prerequisite: consent of instructor.
68:219 Capital Budgeting 3 sh.
Interprets approaches to capital of money capital and to performance measures for investment projects: explicit consideration of profitability, risk and uninterupted selection of investment property. Theory and applications in profit and public sectors.
Simplified case study approach to analysis of operations and performance of various types of financial institutions involving commercial banks, investment companies, thrift, and savings associations, mutual insurance companies, mutual savings banks, and regulatory combinations. Prerequisite: 68:217 or consent of instructor.
68:211 Insurance and Financial Investments 3 sh.
Practical application of insurance principles to group and individual policies with consideration of life insurance and pension plans.
68:210 Risk, Uncertainty, and Assurance 3 sh.
Selected theoretical aspects of risk and insurance: elements of statistical and probability concepts in insurance.
68:211 Risk Management in Business 3 sh.
Analysis of risk in business and selected management techniques for risk measurement, transfer and reduction of risk, risk management techniques, risk experiences and solutions for loss and reduction of losses. Cost studies in risk management.
68:214 Bankruptcy 3 sh.
Prerequisite: knowledge of commercial law.
Internal and external factors influencing marketing decisions; behavioral science applied to consumer behavior; interaction consumer, marketing profit, and strategy. Prerequisites: 68:184, 68:187.
68:233 Marketing Research Methods 3 sh.
Methods of design and analysis of marketing research, statistical analysis of correlation and multiple regression analysis, correlation, statistical analysis, and probability and statistical functions from marketing literature.
68:242 Marketing Models 3 sh.
Re-examination of theoretical and conceptual models in marketing with emphasis on recent advances, latest flow and control models which attempt to solve marketing problems. Prerequisites: 68:233 and 68:241 or permission for project and model development project.
Survey of a number of psychological testing techniques which may be used in research and analysis of consumer behavior. Tests include simulation and properties of various types, unidimensional and multidimensional scaling, ranking, normative scores and cluster analysis, some aremears of data collection methods and computer algorithms.
68:242 Service in Marketing 3 sh.
Examination of current marketing practices and current investigation research of faculty and students. Prerequisite: consent of instructor.
Case studies, augmented by theory research in as such, race and sex and health discrimination. Other groups having similar and DPs discrimination will also be considered.
68:232 Employment Relations and Public Policy 3 sh.
Public issues and discrimination to collective bargaining and labor-management relations.
68:233 Industrial Administration 3 sh.
Theories, principles, methods, and premises of administration of pay, methods of job evaluation, pay scales and economic principles of compensation wage earn the and their comparative rewards and planning the benefits surveys, job analysis and selection compensation.
68:234 Industrial Relations-M.B.A 3 sh.
Theories, principles, and procedures of personnel planning and organization, communication, employee selection, motivation, job motivation, selection, the role of training and development in supervision, assessment of job selection methods, and training evaluation.
Principles for managing personnel within those scope. Those includes are applied to problems of recruitment, selection, performance evaluation, compensation, employee selection, and discrimination. Prerequisite: consent of 68:233.
68:236 Industrial Relations-Fall 3 sh.
Selected problems in human resources management. Prerequisite: consent of instructor.
Case studies in administrative problems such as motivation, learning, perception, attitudes and attitude change, social
is the exception of the undergraduate program. The student must choose from one of these options:

**Business Major Option**

Complete the requirements for a major in one of these areas in the College of Business Administration:
- Accounting
- Administrative Management
- Economics
- Finance
- Financial Economics
- Industrial Relations
- Management System/Management Science
- Marketing
- Administrative Services (see below)

### Areas of Concentration Option

Complete two nine-hour sequences from the following areas in the College of Business Administration:
- Accounting
- Administrative Management
- Economics
- Finance
- Financial Economics
- Industrial Relations
- Management System/Management Science
- Marketing
- Administrative Services (see below)

**Basic Business (see below)**

### Requirements for the Administrative Services Major

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>65:2 Business</td>
<td>Typewriting Problems</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>65:22 Advanced Shorthand and Transcription</td>
<td>3 s.h.</td>
<td></td>
</tr>
<tr>
<td>65:35 Business Machines Applications</td>
<td>2 s.h.</td>
<td></td>
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<tr>
<td>65:112 Word Processing</td>
<td>3 s.h.</td>
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</tbody>
</table>

### One of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>65:145 Office Management</td>
<td>3 s.h.</td>
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<tr>
<td>65:152 Data Processing with CCISOL</td>
<td>3 s.h.</td>
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<tr>
<td>65:171 Principles of Basic Business Administration</td>
<td>3 s.h.</td>
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<tr>
<td>65:151 Basic Systems Analysis</td>
<td>3 s.h.</td>
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</tbody>
</table>

### Administrative Services Majors who do not Intend to Teach shorthand may substitute 65:147 Basic Systems Analysis.

### Requirements for Concentration in Basic Business

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>65:102 Decision Making for Managers</td>
<td>3 s.h.</td>
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<tr>
<td>65:104 Principles of Basic Business Administration</td>
<td>3 s.h.</td>
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<tr>
<td>One additional course in business administration of economics, approved by advisor</td>
<td>3 s.h.</td>
<td>9 s.h.</td>
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</tbody>
</table>

### 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:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>65:191 Principles of Business Education</td>
<td>3 s.h.</td>
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<td>(To be taken in junior year)</td>
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<tr>
<td>65:192 Methods: Business Subjects</td>
<td>3-4 s.h.</td>
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<tr>
<td>75:187 Seminar: Curriculum and Instruction</td>
<td>1 s.h.</td>
<td></td>
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<tr>
<td>Student Teaching</td>
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</tbody>
</table>

(taken concurrently with student teaching)

### Courses for Nonmajors

To choose 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 nonteaching degree in business administration.

### The Graduate Programs

#### Certification Only

The above classification for graduate students who have earned bachelor's degrees without fulfilling requirements for a secondary teaching certificate. For this type of program, the student fulfills all certification requirements by completing a sequence of graduate-level education courses (20-26 s.h.) approved by his advisor (see M.A.T. Program below). In addition, the student may be required to complete courses in business administration, accounting, and economics to strengthen undergraduate preparation in business. The business education course 65:191 Principles of Business Education is also required. No degree objective is implied, although it is possible to request a change in graduate status. In such instances, the normal faculty review of the student's qualifications would occur before any changes could be made.

### Professional Improvement (P.I.)

This is a special status category for graduate students who wish to complete additional coursework without a further degree objective. Students so classified must be formally accepted as P.I. students and must meet regularly with an advisor. At the same time, there is great latitude in the types of courses which are possible. Many students involved in special workshops, seminars, conferences, and institutes are admitted in this category. If such students wish to apply for a degree at a later time, all credit completed while enrolled as P.I. must be evaluated, and the evaluation is reviewed as if it were a new one for admission purposes.

### M.A. Program

This nonthesis program in business education is designed for the graduate student who holds a teaching certificate and has either a major or a minor teaching area in business education. Its purpose is to develop professional competence in teaching business subjects in the secondary school or at the community college level. Upon completion of the courses required for the three areas of study in business education, business administration, and education, the candidate qualifies for the final comprehensive examinations either a two-hour examination in each area, or a three-hour examination in both education and a three-hour examination in one of the remaining two areas. A minimum of 21 s.h. must be included in the program with the above approval, within these feasible distributions:

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**Business Administration/Business Education 239**
Business Administration/Business Education

Business Education

65:201 Foundations of Business Education 3 s.h.
65:265 Directed Readings 1 s.h.
Thesis of the following:
65:320 Seminar: Basic Business Accounting 2-3 s.h.
65:394 Seminar: Teaching Accounting 2-3 s.h.
65:395 Seminar: Office Education 1-3 s.h.
65:397 Seminar: Information Processing 3 s.h.
65:210 Managing Business Instruction 3 s.h.
65:240 Seminar: Business Teaching 2-3 s.h.
Total 12-17 s.h.

Business

Six to 15 s.h. of credit in business administration, accounting, economics, or related business areas, such as business data processing, business communication, office management, or business systems.

Education

Six to 15 s.h. of credit in general education areas which meet the professional needs of the student, such as: general education; educational administration; educational psychology, measurement, and statistics; instructional design and technology; and secondary and continuing education or special education.

Admission Requirements

The student must meet the requirements for admission to the University of Iowa Graduate College. For regular admission, the student must have a G.P.A. of 2.50 and a Graduate Record Examination total score of 1000. If the student's total Graduate Record Examination is less than 1000 and no offsetting evidence of superior ability is available, admission may be conditional. Teaching experience is desirable but not required, and the candidate must hold a valid teacher's certificate.

M.A.T. Program

The Master of Arts in Teaching (M.A.T.) program is a 36-semester-hour nonthesis course of study. It is designed for superior business graduates who have had few or no education courses. The program enables students to enrich their background by completing graduate courses in substantive business and business education areas and in graduate courses which constitute professional preparation for secondary school teacher certification or community college teaching. Two summers and two semesters are usually necessary to complete the M.A.T. program, which requires 18 semester hours in business and business education and 20 semester hours in graduate education courses. The business and business education course must include:
65:191 Principles of Business Education 3 s.h.
65:192 Methods of Business Subjects 3-5 s.h.
The graduate courses in education must include:
Educational psychology 3 s.h.
Philosophy or history of education 3 s.h.
Observation and laboratory practice (student teaching) 12 s.h.
One approved elective 2-3 s.h.
Cautions for the M.A.T. degree must pass comprehensive final examinations in business education and in education. These examinations are taken during the session in which the candidate expects to receive the degree.

Admission Requirements

To be admitted to the M.A.T. program, the candidate must have a bachelor's degree in business administration and meet the general requirements for admission to the University of Iowa Graduate College. For regular admission, the student must have a G.P.A. of 2.70 and a Graduate Record Examination total score of 1000. If the candidate's total Graduate Record Examination score is less than 1000 and no offsetting evidence of superior ability is available, the admission may be conditional.

Ph.D. Program

The program is available to qualified candidates who apply to college and university positions as business teacher educators or to administrative positions in business education. Graduates of this program have also assumed administrative positions in other areas of education and in business, industry, and government. The Ph.D. program is designed to improve the competence of business teacher at the postsecondary school level, primarily four-year college-level teachers of business teacher education programs and to strengthen the research and administrative skills of students aspiring to both instructional and administrative positions in postsecondary and secondary business education programs.

The Ph.D. candidate in business education is expected to satisfy the requirements for two toks of research before taking the comprehensive examinations. The tool areas are to be chosen from foreign language, education, advanced mathematics, computer programming, scientific methods, or other appropriate research tools approved by the advisor. The doctoral program requires coursework, approved by the advisor, in each of the following areas:

Business Education

Common core recommended:
65:201 Foundations of Business Education 3 s.h.
65:210 Managing Business Instruction 3 s.h.
65:270 Seminar: Business Education Research 3 s.h.
65:280 Seminar: Business Education Policy 3 s.h.
Two additional 200-level courses in business education 8 s.h.
Total 18 s.h.

Cognate and Related Areas

Business: A minimum of 9 s.h. in 200-level courses in accounting, business administration, economics, or administrative support systems (including business communications, data processing systems, and related courses).

Education: A minimum of 9 s.h. in 200-level courses from such areas as: educational psychology, instructional research, educational administration, educational administration, measurement, and statistics; instructional design and technology; postsec mortality and continuing education; or special education.
The program requires the completion of 90 semester hours beyond the bachelor’s degree, including two approved courses in economic theory beyond principles of economics. A three-four comprehensive examination is required in each area of study.

Financial Aids
A number of graduate assistantships are available for M.A., M.T., and Ph.D. candidates. These include teaching asis- tantships, research assistantships, and assistantships for supervising machine laborations. To be eligible for such assistantships, the student must have been accepted for graduate study at The University of Iowa and possess the qualifications, preferably involving successful teaching experience, for the type of position available.

Admission Requirements
The student must meet the requirements for admission to the University of Iowa Graduate College. For regular admission, the student must have a G.P.A. of 3.70 and a Graduate Record Examina- tion score of 1000. If the candidate's total Graduate Record Examination score is less than 1000 and no offering of superior ability is indicated, the student may be conditionally admitted. Teaching experience is desirable, with previous teaching assignment in business education or a comparable area.

Courses

**Primarily for Undergraduates**

65:21 Basic Typing 3 s.h.
Keyboard mastery; problem-solving related to personal and business occupations; sentence structure, mechanics, and reports. Open only to students with no previous formal typing course.

65:22 Business Typing Problems 3 s.h.
Emphasis on the development and integration of typing skills with word-processing computer systems. Open only to students in the preparation of letters, forms, memorandums, reports, and other business communications. Prerequisites: 65:21 or 65:11.

65:23 Basic Secretarial 3 s.h.
Secretarial theory and development of skills through business dictation and transcription. Open to students with less than one year of high school or equivalent. Prerequisites: 65:21 and 65:11.

65:25 Advanced Secretarial and Transcription 3 s.h.
Review of shorthand theory, principles of shorthand dictation and in transcription on a production basis. Prerequisites: 65:21 or equivalent, 65:22 or equivalent.

65:31 Business Machine Applications 2 s.h.
Business-related mathematics processes and basic business machine. Emphasis on business applications using modern computing machines.

**For Undergraduates and Graduates**

68:11 Independent Study arr.
Individual guided readings and projects in business education. Prerequisites: junior standing and consent of instructor.

68:15 Student Teaching for Graduates 3 s.h.
Application of problem solving in actual situations as consumer credit and financial decisions, payment on installment, consumer action in sales and economic principles. Same as 72:123.

68:16 Principles of Basic Business 3 s.h.
Integration of principles of business at the level of analysis, and personal financial management (for Honorary and Technical Club students and as a business and social studies elective). Same as 72:114.

68:17 Word Processing 3 s.h.
Concepts of word processing, a systems approach for improving efficiency of business communication, emphasis on word processing management; includes orientation to automatic typewriter/software systems and dictating/transcribing equipment. Prerequisites: 10 or equivalent.

68:20 Educational Communication 3 s.h.
Differential, instructional, and language processes in business and other instructional settings, reinforced through observation and practice in the classroom and in business. Prerequisites: 10 or equivalent in educational communication, or consent of instructor.

68:22 Written Communication in Business 3 s.h.
Application of principles of paragraph and sentence construction, principles of organization, and grammar to business writing. Emphasis on the writing and reporting process in business correspondence and formal business writing. Prerequisites: consent of instructor in written communication.

68:23 Office Management 3 s.h.
Principles of organization and management related to the business organization function in acquisition, distribution, production, and service. Emphasis on the administrative function in offices systems. Prerequisites: junior standing.

68:24 General Systems Analysis 3 s.h.
Introduction to business systems analysis, theory and practice, systems analysis, design and measurement, applied research projects. Prerequisites: 68:21 and consent of instructor.

68:25 Data Processing with COBOL 3 s.h.
Introduction to the computer sciences, theory and practice, systems analysis, design and measurement, applied research projects. Prerequisites: 68:21 and consent of instructor.

68:26 Business Education Internship 3 s.h.
Emphasis on the teaching profession, teaching philosophy, and educational considerations in data processing. Prerequisites: senior standing.

68:27 Principles of Business Education 3 s.h.
Philosophy of education and planning strategies for the business education curriculum; relationship of business programs to vocational education. Open spring semester only.

68:28 Business Education Subjects 3 s.h.
Study of objectives, content, methods, and -educational problems associated with teaching business subjects, and ability to apply them to the teaching situation. Six semester hours of credit, depending on areas of certification chosen, from the following modules:

- Data Processing
- Accounting
- Business Education Internship

68:29 Current Consumer Topics 1-3 s.h.
Current issues and developments and their applications to individuals and families. Repeatable for credit. Same as 72:123.

68:30 Organization and Administration of Cooperative Programs 3 s.h.
Organization, operation, and coordination of cooperative offices, data evaluation, and other cooperative programs. Same as 72:123.

68:31 Principles of Vocational Education 3 s.h.
Study of the philosophy and sociology of vocational education, a study of the local community, and the administration and program status of vocational education, technical, and adult education in the nation, with special emphasis on Iowa programs. Same as 72:113.

68:32 Special Problems arr.
Individualized research problem area for study in an independent study or group study basis. Prerequisites: instructor and consent of instructor.

68:33 Business Education Workshop arr.
In-service programs on instructional methods, evaluation, trends, and innovations in business education. Offered summer only.

**Primarily for Graduates**

68:31 Principles of Business Education 3 s.h.
Understanding business, technical, and professional courses which have guided business education programs in the past. Philosophic, sociological, and educational analysis of the development and results of such education programs and their influence on business education. Same as 72:223.

68:233 Textbook: Basic Business 2-5 s.h.
Applications of curriculum development principles to the teaching of basic business subjects. Emphasis on how teaching techniques, materials, and methods contribute to the teaching of basic business subjects. Same as 72:233.

68:243 Textbook: Teaching Accounting 2-5 s.h.
Applications of instructional and curricular development principles in teaching accounting. Prerequisites: consent of instructor in basic business subjects. Same as 72:243.

68:253 Textbook: Office Education 2-5 s.h.
Applications of instructional and curricular development principles in teaching office education. Prerequisites: consent of instructor in basic business subjects. Same as 72:253.

68:263 Textbook: Teaching Management 2-5 s.h.
Applications of instructional and curricular development principles in teaching business management. Prerequisites: consent of instructor in basic business subjects. Same as 72:263.

68:273 Textbook: Business Education 2-5 s.h.
Applications of instructional and curricular development principles in teaching business education. Prerequisites: consent of instructor in basic business subjects. Same as 72:273.

68:283 Textbook: Business Education Internship 2-5 s.h.
Applications of instructional and curricular development principles in teaching business education internship. Prerequisites: consent of instructor in basic business subjects. Same as 72:283.
**Undergraduate Majors**

The bachelor's degree programs in economics provide an excellent educational 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. Economics is also regarded as excellent preparation for law 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 degree programs in economics—the B.A. and B.B. degrees in the College of Liberal Arts and the B.B.A. in the College of Business Administration. The B.B.A. degree in economics is designed to allow the student maximum flexibility in achieving a well-rounded liberal arts education. The College of Business Administration requirements associated with the B.B.A. degree in economics emphasize a background in the business fields of accounting, finance, marketing, business law, and management.

For a description of the B.A. and B.B. degree programs in economics, see the College of Liberal Arts section of the Catalog.

**Program for the B.B.A. Degree**

In addition to the common requirements for students in the College of Business Administration, the B.B.A. degree in economics requires 16 semester hours in 100-level economics courses, including 6E:103 Microeconomics and 6E:105 Macroeconomics.

Excellence is the foundation for the B.B.A. degree program. The student must meet the requirements of the degree through an innovative program by meeting the common requirements in the College of Business Administration and completing two areas of concentration, each consisting of at least three courses (nine semester hours), two of which must be courses offered by the College of Business Administration. A student may select courses from those offered by the Department of Economics to fulfill the areas of concentration requirement. The two areas of concentration/environment may be approved by the student's advisor.

**Graduate Program**

**Master of Arts**

The M.A. degree program provides training in applied economics. It can be completed in three semesters by a student who performs well in the first semester and then transfers to the Ph.D. program at that time with no loss of credit. Specialized M.A. programs from which the student may choose include: environmental economics; urban and regional economics; international economics and finance; economic development; financial and monetary economics; economics of the public sector; health economics; economic planning and budgeting; business and managerial economics; and labor economics and labor relations. A complete description of these programs is available from the Department.

The Department offers a joint M.A.-J.D. program in which it accepts up to nine semester hours in law to apply to the M.A. degree, and the College of Law accepts coursework in economics to apply toward the J.D. degree.

**M.A. Course Sequence**

**First Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>6E:183</td>
<td>Statistical Methods in Economics</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>6E:202</td>
<td>Topics in Economics</td>
<td>1 a.h.</td>
</tr>
<tr>
<td>6E:204</td>
<td>Macroeconomics</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>6E:201</td>
<td>History course or elective</td>
<td>3 a.h.</td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>6E:202</td>
<td>Theory Course</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>6E:184</td>
<td>Methods of Quantitative Economics</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>6E:201</td>
<td>Elective</td>
<td>3 a.h.</td>
</tr>
</tbody>
</table>

**Third Semester (threshold option)**

All M.A. students are required to take one course in either economic history or history of economic thought. In addition, the student will take three electives and write a thesis for a minimum of 30 semester hours, or take five electives and write a research paper in two 200-level economics courses for a minimum of 34 semester hours.

The program is designed so that the student can be ready to complete the requirements for the degree by the end of the third semester, and to take a fourth semester.

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**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 such topics as wealth and poverty, money and prices, income and consumption, government expenditures and taxation, prosperity and depression, inflation and unemployment, big business and labor unions, and hundreds of other matters that intimately affect the way people live.

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

The Ph.D. program is designed to provide students with rigorous training in the areas of micro- and macroeconomics, monetary theory, mathematical economics, and econometrics. In addition, the student selects a major area for intensive study and specialization. The usual time required to complete the Ph.D. program is four years. The Ph.D. program has three components: a coordinated sequence of core courses, a set of major area courses, and a dissertation.

Core Component

The core component is designed to bring students to a high level of technical competence. The academic load in the core sequence assumes that the student is employed as a research or teaching assistant. Students not employed may carry additional coursework.

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.

The core sequence:

First Semester
6E:180 Mathematics for Economists 3 s.h.
6E:183 Statistical Methods in Economics 3 s.h.
6E:200 Topics in Economics 1 s.h.
6E:204 Mathematical Economics I 3 s.h.
Second Semester
6E:203 Microeconomics I 3 s.h.
6E:207 Microeconomics II 3 s.h.
6E:211 Mathematical Economics II 3 s.h.
Third Semester
6E:205 Microeconomics III 3 s.h.
6E:221 Econometrics I 3 s.h.
Field course 3 s.h.
Fourth Semester
6E:202 Econometrics II 3 s.h.
Field courses 6 s.h.

For students with sufficient mathematical and statistical background, 6E:180 and/or 6E:183 are waived. Students planning to specialize in econometrics should take appropriate courses in mathematical statistics.

Courses

Primarily for Undergraduates

Note: 6E:1 and 6E:2 may be taken in any order, or they may be taken concurrently. They satisfy the social science core requirements.

6E:300 Cooperative Education Training 3 s.h.
6E:401 Principles of Economics 4 s.h.
6E:403 Organization and Analysis of Modern Economic Aggregates 3 s.h.
6E:412 International Finance: Monetary and Fiscal Policy 3 s.h.
6E:422 Introduction to Econometrics 3 s.h.
6E:423 Introduction to Macroeconomics 3 s.h.
6E:424 Principles of International Economics 3 s.h.
6E:425 Principles of Organization and Analysis of Modern Economic Aggregates 3 s.h.
6E:426 International Finance: Monetary and Fiscal Policy 3 s.h.
6E:427 Introduction to Econometrics 3 s.h.
6E:428 Introduction to Macroeconomics 3 s.h.
6E:429 Principles of International Economics 3 s.h.

Economic Analysis and Policy

6E:100 Price, Employment, and Production Theory 3 s.h.
6E:201 Macroeconomics 3 s.h.
6E:203 Microeconomics I 3 s.h.
6E:207 Microeconomics II 3 s.h.
6E:211 Mathematical Economics II 3 s.h.
6E:221 Econometrics I 3 s.h.
Field course 3 s.h.
6E:205 Microeconomics III 3 s.h.
6E:225 Econometrics II 3 s.h.
6E:290 Work-study 1-3 s.h.
6E:300 Cooperative Education Training 3 s.h.
6E:301 Principles of Economics 4 s.h.
6E:303 Organization and Analysis of Modern Economic Aggregates 3 s.h.
6E:312 International Finance: Monetary and Fiscal Policy 3 s.h.
6E:322 Introduction to Econometrics 3 s.h.
6E:323 Introduction to Macroeconomics 3 s.h.
6E:324 Principles of International Economics 3 s.h.
6E:325 Principles of Organization and Analysis of Modern Economic Aggregates 3 s.h.
6E:326 International Finance: Monetary and Fiscal Policy 3 s.h.
6E:327 Introduction to Econometrics 3 s.h.
6E:328 Introduction to Macroeconomics 3 s.h.
6E:329 Principles of International Economics 3 s.h.
6E:400 Price, Employment, and Production Theory 3 s.h.
6E:401 Macroeconomics 3 s.h.
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6E:429 Principles of International Economics 3 s.h.

Teaching and Research

Teaching and/or directed research are vital to the training of candidates for the Ph.D. degree in economics. The Ph.D. degree requires candidates to engage in teaching/research for at least 6 terms (semesters or summer sessions). The typical amount of service in each term is 30 hours per week.

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6E:401 Macroeconomics 3 s.h.
6E:403 Organization and Analysis of Modern Economic Aggregates 3 s.h.
6E:412 International Finance: Monetary and Fiscal Policy 3 s.h.
E110 Money and Banking 3 s.h.

Money, institutions, theory, practice and policy with respect to the role of money in the determination of income, unemployment, and price levels. Emphasis on financial markets and banking. Prerequisites: E111 and E121 or senior standing.

E118 Economics of the Government Sector 3-4 s.h.

Economic regulation of government in modern economic systems: economic decision-making in public, governmental, and private sectors. Topics include tax and expenditure policies and impact on economic growth and distribution of income. Extension to growth and stability. Prerequisites: E511 and E521 or senior standing.

E153 Physical Economy of the Military Industrial Complex 3 s.h.

Economic impact analysis focuses on the theory of "military-industrial" complex, national defense, defense industry and its impact on the economy, with emphasis on relevance to employment, income and national security. Prerequisites: E111 and E521 or senior standing.

E155 International Economics 3 s.h.

Foreign exchange and balance of payments: international monetary arrangements and policies. Theory of international trade: role of tariffs and subsidies in international trade. Prerequisites: E111 and E211 or senior standing.

E171 Natural Resources in the Work Economy: Control and Policy 3 s.h.

Economic issues based on the "new society" in which energy, resources, and demand for goods and services shape market activity, policies for economic growth and development, role of technological advances in industrial, natural resource and foreign economic activity. Prerequisites: E111 and E521 or senior standing.

E179 Economic Development 3 s.h.

The problem of underdevelopment in third world countries, analysis of theories of policies and processes of development. Prerequisites: E111 and E521 or senior standing.

E182 Economic Growth and Environmental Decay 3 s.h.

Causal factors of economic growth in developing countries while analyzing resource and energy balances. Theories and policies for sustainable development and economic growth and pollution: current environmental and resource issues, policies and examples of successful environmental protection strategies. Prerequisites: E111 and E521 or senior standing.

E192 Regional and Urban Economics 3 s.h.

Theory and practice of regional development and urban policy. Functional location of productive activity, location by region, city, and county. The importance of zoning, and mass transit in regional economic activity. Public policy analysis is related to economic growth and stability. Prerequisites: E111 and E521 or senior standing.

E197 Problems in Urban Quantities 3 s.h.

Application of economic analysis to urban problems: examination of role of city, urban economy, products, and expenditures in the economic activity of the nation. Prerequisites: E111 and E521 or senior standing.

E199 Industrial Organization 3 s.h.

Economic theory of pricing, quantity, and effectiveness of public policy. Development of theory of market behavior, welfare analysis, and antitrust. Prerequisites: E111 or senior standing.

E202 Introduction to Econometrics 3 s.h.

Analysis of statistical tools in economic analysis. Introduction to estimation techniques, regression analysis, and hypothesis testing. Prerequisites: M203 or E203 or senior standing.

E208 Statistical Methods in Economics 3 s.h.

Descriptive statistics: sampling, sample variance, and probability distributions: sampling in economics: hypothesis testing and sampling estimation. Prerequisites: one semester of calculus, or consent of instructor.

E214 Methods of Quantitative Economics 3 s.h.

Theory of price determination, behavioral models and econometric models: input-output analysis, introduction to micro analysis. Prerequisites: E111 or E211 or E212. Consent of Instructor.

E216 Microeconomics 3 s.h.

M.R.A. Courses 2-3 s.h.

E218 Advanced Microeconomics 3 s.h.

E220 Undergraduate 3 s.h.

For Advanced Undergraduates

E221 Senior Thesis in Economics 3 s.h.

Primarily for honors students. Prerequisite: consent of instructor.

E222 Senior Seminar in Economics 3 s.h.

Prerequisite: consent of instructor.

E229 Readings and Independent Study in Economics 3 s.h.

Prerequisite: consent of instructor.

Primarily for Graduates

Qualifying non-graduate students permitted to work in seminars failing for graduate students with consent of the instructor.

E230 Topics in Economics 3 s.h.

Introduction to the faculty, programs, perspectives, and areas of specialization in the Department.

E232 Seminar in Advanced Microeconomics 3 s.h.

E233 Seminar in Advanced Macroeconomics 3 s.h.

E235 Seminar in Advanced Mathematical Economics 3 s.h.

Quantitative Methods 3 s.h.

E236 Seminar in Advanced Econometrics 3 s.h.

E237 Seminar in Advanced Macroeconomics 3 s.h.

E238 Seminar in Advanced Industrial Organization 3 s.h.

E240 Seminar in Advanced Urban Economics 3 s.h.

E241 Seminar in Advanced Microeconomics 3 s.h.

E242 Seminar in Advanced Macroeconomics 3 s.h.

E243 Seminar in Advanced Industrial Economics 3 s.h.

E244 Seminar in Advanced Urban Economics 3 s.h.

E245 Seminar in Advanced Mathematical Economics 3 s.h.

E246 Seminar in Advanced Econometrics 3 s.h.

E247 Seminar in Advanced Industrial Organization 3 s.h.
The College of Dentistry is both administratively and physically an integral part of the University, in throws 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; Nalology; physiology; general pathology; oral pathology; pharmacology; microbiology.

Restorative Dental Sciences

Gross, microscopic and radiographic dental anatomy; dental materials; endodontology; operative dentistry; fixed partial prostheses; removable prosthesis.

Gross Medicine

Preventive dentistry; oral diagnosis; dental radiology; oral pathology; microscaphology and pain control; oral surgery; periodontology; in addition, there are selected mini-courses in the Bioclinic Option Program which are correlated with the basic and clinical sciences.

Community Dentistry


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 clinic work during the first year.

The second-year program includes additional correlating activities in the basic and clinical sciences, such as training in the effective coordination of auxiliary personnel. This training is in conjunction with the dental auxiliary utilization program.

Third-year dental students report through a series of "darktests" which gives them meaningful exposure to each of eight clinical disciplines.

Fourth-year dental students are involved in the delivery of comprehensive dental care in an environment which closely simulates conditions in private dental practice.

Fourth-year students are also exposed to various extramural health programs at state and University Hospitals and the State Department of Health.

There are available clerkships in which fourth-year dental students assist in selected dental offices throughout Iowa. The preceptors expose students to facets of dentistry usually not obtainable 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 examinations in lieu of course participation. The time thus saved may be used in a number of prerequisite ways, including to progress through the curriculum at a faster rate.
Promotions and Graduation

Student promotions and graduation are determined by the Academic and Professional Performance Committees appointed by the Dean. The criteria for promotions and graduation are based on academic performance and overall contribution to the College. The Dean may require the student to withdraw from the College or take other action if the student is not making satisfactory progress.

Committee for Appeals

When a student has been asked to withdraw from the College, or has appealed a decision concerning withdrawal, the Dean may consider the appeal in writing, and may appoint a committee to hear the appeal. The committee will consider the evidence and make a recommendation to the Dean.

State Board of Dentistry Licensure Examination

The states of Kansas, Colorado, Missouri, Oklahoma, Iowa, Wisconsin, Nebraska, and North Dakota have established a testing facility at each of these states to administer the state licensing examination. The examination is designed to test the knowledge, skills, and abilities of dentists and dental hygienists.

Facilities

The Dental Science Building, a major unit in an expanded Health Center, provides comprehensive educational facilities. The Center includes the College of Dentistry, University Hospitals and a Health Sciences Library.

Financial Assistance

Under the Health Professions Scholarship and Loan Programs, eligible dental students may borrow up to $10,000 each year of their undergraduate professional studies. Preference is given to students who would otherwise be able to finance their own professional studies. Loans are available 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 portion of the loan in consideration of the graduate's selection of location of service in an area where there is a shortage of dental services.

Student Organizations

All dental students are eligible for membership in the American Student Dental Association. Students who rank in the upper 12 percent of the senior class are eligible for Omicron Kappa Upsilon, national scholastic honorary dental society. There are various student organizations, including the Delta Sigma Delta, Psi Chi, and Sigma Omicron chapters.

Experiences

The College of Dentistry maintains a variety of experiences available to students, including clinical experiences, research opportunities, and other activities that contribute to the development of successful dental professionals.

Admission

Applications are accepted beginning June 1 of the year prior to the year for which admission is desired. The deadline for applications is January 1 for the class entering the College for the following August.

The prospective student is encouraged to complete a program leading to a standard bachelor's degree before entering dentistry, or to consider combining a program with another field of study that will enhance the student's degree program.

The deadline for applications is January 1 for the class entering the College for the following August.
General Basis for Admission

Each applicant must submit a completed application form and official transcripts from all colleges attended to AADASS (American Association of Dental Schools Application Service). The forms are available from the University Office of Admissions.

The specific academic requirements for admission to the College of Dentistry are the same as those of no less than 86 semester hours of academic study at an accredited college.

Predental Studies

The predental program of study should include:

Rhetoric
Satisfactory accomplishment in English composition and speech communiques 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), with requirement may be satisfied by a one-year course in general biology or biology 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 sciences, philosophy, psychology, history, foreign languages and mathematics to provide a well-rounded educational background.

The dentistry admissions committee may waive or reduce some of the above requirements when the candidate for admission is considered outstanding in other respects. In exceptional circumstances, candidates with fewer than 84 semester hours of college work will be considered for admission if the applicant's performance and potential for the dental profession are considered outstanding.

Combined Liberal Arts-Dentistry Course

The provision for advancement by the College of Liberal Arts of 30 semester hours of elective credit earned in any other college of the University makes it possible for the student who enters the College of Dentistry to obtain the bachelor's degree from the College of Liberal Arts upon successful completion of the freshman year in Dentistry. To take advantage of this plan, the student must fulfill all specific requirements for the bachelor's degree, including the requirements for a major in some department or area of concentration. The successful completion of the last 30 hours in the College of Liberal Arts 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 2.5 (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 predental sciences.

Interviews

Personal interviews are required of applicants for admission to the College of Dentistry.

Required Dental Admission Test

All applicants must complete the Dental Admission Test sponsored by the Council on Dental Education of the American Dental Association. Tests are given twice annually, and 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 last 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 not refundable 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

Pursuit 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 work and practice of dentistry. The committee considers applicants' academic qualifications, the scores on the required Dental Admission Test, and several other factors.

Since the available places in the freshman class of the College of Dentistry are limited, preference will be given to applicants who are residents of Iowa under the University's regulations on residence. If it is found possible to consider a limited number of applicants who are not residents of Iowa, preference will be given to nonresident applicants from states without dental schools, and to other nonresident applicants of outstanding scholarship and promise. Nonresidents whose grade-point averages are below 2.5 are discouraged from applying.

Graduate and postgraduate study programs leading in the Master of Science degree are offered by the College of Dentistry's departments of Dental Hygiene, Fixed Prosthodontics, Operative Dentistry and Endodontics, Oral Pathology and Diagnosis, Oral Surgery, Orthodontics, Periodontics, Preventive and Community Dentistry, and Removable Prosthodontics. Admission to any of the graduate programs requires satisfaction of all prerequisites 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.

Eligibility for admission to the professional program requires at least 60 semester hours of college coursework and at least a 2.85 cumulative grade-point average (3.4 for a transfer student). In fulfilling the 60-hour requirement, the student must satisfy general education requirements as set forth in the College of Liberal Arts and complete the following dental hygiene prerequisites:

- Five semester hours (eight for transfer students) of zoology or biology—373 Principles of Animal Biology.
- Four semester hours of organic chemistry—47 General Chemistry I;
Four semester hours of organic chemistry, including Biochemistry—4.9 General Chemistry II, 4.9 General Chemistry Laboratory; Four semester hours of microbiology—61:194 Microbiology; Three semester hours of nutrition—11:194 Nutrition Work with Children; Four semester hours of psychology—31:1 Introduction to Psychology; 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 Anatomy and 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 adequate 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. Transferer students must submit both College of Liberal Arts and dental hygiene applications. After submitting their dental hygiene applications, all applicants are interviewed by the dental hygiene admissions committee.

Graduate Program

Although the need for qualified educators in dental hygiene continues, the graduate faculty with recent years has recognized the need for preparing graduates to contribute toward the advancement of new knowledge in dental hygiene. This has resulted in revision of graduate program goals and criteria to emphasize the acquisition of advanced scientific knowledge in the biological and social sciences and basic knowledge of and experience in conducting research. The curriculum design provides the student with major concentration in advanced dental hygiene theory. In the biological field, this consists of the physiopathology of dental plaque including plaque microbiology and biochemistry, and the relationship of plaque to causation of periodontal disease; the response of the host to dental plaque, emphasizing immunological mechanisms; and the prevention of dental diseases by immunization and antimicrobial agents. In the social science area, students will read literature on the relationships between the individual, the family and community and oral health outcomes, consider how oral health could be improved in simulated community settings, and learn how social science research methodology can be utilized to study problems relevant to the profession of oral hygiene and to oral health. Study in the educational field involves trends in dental hygiene with emphasis on dental hygiene education, elements of curricular design; and the theory and application of didactic and clinical teaching in dental hygiene. Although students may begin the program during the fall, spring, or summer session, enrollment at the beginning of the summer session is preferred. Applications, transcripts, and Graduate Record Examination (GRE) scores should be submitted at least six months prior to the semester admittance is desired. Most students should expect to take two academic years to complete degree requirements. Approximately 12 semester hours are assigned to courses in advanced knowledge in dental hygiene and 10 semester hours to research methodology and to hosts: prevention and defense. The remaining 12 hours are to include electives in the biomedical and social sciences. Elective coursework related to the biomedicale sciences includes microbiology, histology, biochemistry, oral pathology, and periodontology. Electives emphasizing population research and the social, economic, and political aspects of health include epidemiology, medical sociology, health care planning, and the sociology of change. Students are strongly encouraged to consider taking statistics in higher education, such as educational measurement, theories of learning, and administration. After the student completes his/her coursework and thesis is accepted, the candidate must pass a comprehensive examination over the graduate program of study. Courses required in Dental Hygiene are 88:201 Seminar: Dental Hygiene Literature Review; 88:202 Evaluation of Dental Hygiene Research; 88:205 Research: Dental Hygiene; 88:204 Selected Topics in Dental Hygiene Education; 88:205 Socio-medical Topics in Oral Health Care; and 88:206 Thesis: Dental Hygiene. Other required courses are 111:212 Statistical Methods in the Biomedical Sciences, or 77:143 Introduction to Statistical Methods; and 111:204 Design and Evaluation of Research Dentistry.

Graduate Admission Requirements

Applicants for admission are subject to the general rules of the Graduate College. Departmental requirements include an acceptable score on the Graduate Record Examination and a 2.5 minimum undergraduate cumulative grade-point average (A=4). The undergraduate education of the applicant should include coursework equivalent to those in the undergraduate dental hygiene major at The University of Iowa. Candidates for admission must submit official transcripts of all undergraduate academic records, an application for admission, and Graduate Record Examination scores to the Office of Graduate Admissions, 259 Union. These materials must be received before the candidate's application can be processed. Application for admission and information on the Graduate Record Examination can be obtained from the Office of Graduate Admissions.

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 interest 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 Center 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

DE 101 Dental Hygiene 4 s.h.
Dental hygiene program includes didactic, laboratory, and clinical experiences. Students are required to attend classes and complete the program.

DE 201 Dental Hygiene Theory I 4 s.h.
Prerequisites: Eligible for enrollment in the Dental Hygiene program. This course covers the foundational theory of dental hygiene and prepares students for the clinical portion of the program.

DE 202 Dental Hygiene Theory II 4 s.h.
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DE 301 Dental Hygiene Practice I 6 s.h.
Prerequisites: Eligible for enrollment in the Dental Hygiene program. This course covers the clinical practice of dental hygiene and prepares students for the clinical portion of the program.

Endodontics

This course provides an in-depth study of endodontic theory and practice. The course covers the diagnosis, therapy, and prevention of endodontic diseases. Students will learn to perform endodontic procedures and understand the role of endodontics in dental health care.

Preclinical Endodontics

This course provides a theoretical and practical foundation for the clinical endodontics course. Students will learn about the biology of the pulp and the root canal system, and will perform endodontic procedures on exodoncied teeth.

Graduate Program in Endodontics

The graduate program is designed to provide advanced education in endodontics. Students will learn about the diagnosis, therapy, and prevention of endodontic diseases. The program includes a research component for students interested in pursuing a career in research.

Students who have completed the graduate program in endodontics will be eligible for the following positions: dentist, assistant professor, or researcher. The program also provides opportunities for students interested in pursuing a career in research.

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specialties of dentistry. A course in research methodology as well as a course in biostatistics or elementary statistical inferences in medicine is required. Coursework in the general area of basic science is also required. Oral and/or written exams are given during the requisite 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 or publication on another topic.

Certificate Program
A certificate program offered by the Department provides more clinical experience and has no requirement for a research project and a thesis. The certificate also satisfies the formal training requirements for eligibility for the American Board of Prosthodontics examination.

Admission
The minimum requirements for admission into the program are: (1) completion of the 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 GTE is required.

Courses
81:128 Prosthodontic Materials Laboratory 3 s.h.
Manipulation and handling of dental materials is learned through laboratory exercises and projects. Text: Leight, A. 1986.
81:121 Dental Materials 3 s.h.
Properties and applications of prosthodontic materials, structural properties of dental materials is taught.
81:122 Section I 2 s.h.
Introductory introduction to concepts of occlusion and stabilization.
81:148 Fixed Prosthodontic Techniques Lecture 2 s.h.
Lectures covering introduction to fixed prosthodontics, including design, materials, and techniques used in construction of various types of metal and porcelain fixed restorations.
81:141 Fixed Prosthodontic Technique Laboratory 3 s.h.
Technical procedures required in construction of fixed prosthoses.
81:148 Section II 1 s.h.
Practical application of the concepts of occlusion and stabilization in the clinical setting.
81:189 Fixed Prosthodontics 4 s.h.
Seminar covering previously acquired knowledge in biological and basic science and technical courses with emphasis on new fixed prosthodontic procedures, patient in Dental Operative Instruction by individual examination and demonstration.

Primarily for Graduates
81:229 Seminar: Fixed Prosthodontics 1 s.h.
Conferences and discussion on assigned research topics.
81:236 Seminar: Oral Health 1 s.h.
Conferences and discussion on assigned research topics.
81:237 Seminar: Dental Materials 1 s.h.
Conferences and discussion on assigned research topics.
81:238 Seminar: Fixed Prosthodontics Topics 1 s.h.
Assign research topics for student seminar presentations.
81:238 Research: Fixed Prosthodontics 3 s.h.
Research design and collection of data on selected research project.
81:231 Thesis Preparation: Fixed Prosthodontics 3 s.h.
Prepared in accordance with regulations of the Graduate College.
81:234 Advanced Clinical Fixed Prosthodontics 3 s.h.
Recent controversies assigned cases in sequence of difficulty.
81:241 Technique Methods: Fixed Prosthodontics 3 s.h.
Advanced technical procedures.
81:242 Library Assignment: Fixed Prosthodontics 3 s.h.
Literature search and preparation of bibliographies and materials.
81:243 Practice Teaching: Fixed Prosthodontics 3 s.h.
Teaching assignments for credit.

Operative Dentistry
Department head: Wallace W. Johnson, Assistant professor, Faculty advisors: James Fuller, Assistant professor, Dean Rosen, School of Dentistry.

Courses
81:128 Prosthodontic Materials Laboratory 1 s.h.
71:121 Dental Materials 3 s.h.
81:122 Section I 2 s.h.
81:148 Fixed Prosthodontic Techniques Lecture 2 s.h.
81:141 Fixed Prosthodontic Technique Laboratory 3 s.h.
81:148 Section II 1 s.h.
81:189 Fixed Prosthodontics 4 s.h.
81:229 Seminar: Fixed Prosthodontics 1 s.h.
81:236 Seminar: Oral Health 1 s.h.
81:237 Seminar: Dental Materials 1 s.h.
81:238 Seminar: Fixed Prosthodontics Topics 1 s.h.
81:238 Research: Fixed Prosthodontics 3 s.h.
81:231 Thesis Preparation: Fixed Prosthodontics 3 s.h.
81:234 Advanced Clinical Fixed Prosthodontics 3 s.h.
81:241 Technique Methods: Fixed Prosthodontics 3 s.h.
81:242 Library Assignment: Fixed Prosthodontics 3 s.h.
81:243 Practice Teaching: Fixed Prosthodontics 3 s.h.

Predoctoral Program
Coursework and clinical experiences in operative dentistry are fundamental to the overall education of a dental student. The operative curriculum is designed so that the didactic material presented relates closely to the laboratory and clinical experiences. The total program of instruction will provide the students with the necessary knowledge and experience to proceed independently in operative dentistry during the fourth year of training.

Graduate Program
The Department of Operative Dentistry offers a program of advanced training designed to prepare dentists for teaching, research, and practice. Since operative dentistry is not a specialty area of dentistry, there is ample opportunity in the graduate program for the student to pursue courses that may be of particular interest. 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. Students may take the program for either a Master of Science degree or for a certificate in operative dentistry.

The following requirements must be met for the Master of Science degree:

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.

Registration of an acceptable thesis based on original research. The student should plan to finish his or her own financial support for the research and thesis, and formal defense of the thesis and examination of the candidate by an examining committee.

Courses
Operative Dentistry
Department chairman: Wallace W. Johnson, Academic advisors: James Fuller, Resident professor, Dean Rosen, School of Dentistry.

D.D.S. Program
81:21 Operative Dentistry Laboratory for Foundations 2 s.h.
Basic study of dental materials and methods by which these materials are applied to the restorative processes of operative dentistry.
81:216 Operative Dentistry Lecture 1 s.h.
Lectures and seminars on removable partial dentures, fixed prosthodontics, and construction of human primary and permanent dentition.
81:211 Dental Anatomy Laboratory 3 s.h.
Dental study of human teeth morphology and function.
82:211 Operative Dentistry II am. Treatment of patient cases in the Operative Clinic; selection and discussion of case problems; concentration on assimilation restorative procedures.

82:240 Operative Dentistry Advanced Clinic II am. Treatment of patient cases in the Operative Clinic; selection and discussion of case problems; concentration on assimilation restorative procedures.

82:242 Operative Dentistry Advanced Clinic IV am. Treatment of patient cases in the Operative Clinic; selection and discussion of case problems; concentration on assimilation restorative procedures.

82:244 Operative Dentistry Advanced Clinic V am. Treatment of patient cases in the Operative Clinic; selection and discussion of case problems; concentration on assimilation restorative procedures.

82:245 Clinical Demonstrating am. Oral Pathology and Diagnosis


82:210 Operational Dentistry Seminar I am. Literature review and discussion of past and present status of operative dentistry.

82:210 Operational Dentistry Seminar II am. Literature review and discussion of past and present status of operative dentistry.

82:230 Clinical Research in Dental Treatment am. Research Program

82:320 Research Dentistry Research I am. Topic selection, comprehensive literature survey for research project, begin research project.

82:321 Research Dentistry Research II am. Protocol completed, begin research investigation.

82:322 Research Dentistry Research III am. Complete research investigation, gather and organize data.


82:325 Thesis Preparation in Operative Dentistry am. Complete thesis, defend before the committee, and complete examinations. Clinical Studies

82:420 Operative Dentistry Advanced Clinic I am. Evaluation, analysis, and comparison of past and present operative procedures; selection, assignment, and rotation assignment on a narrow basis.

The tools for research will be determined for each student after consultation with the major advisor. Minimum requirements for completion of this program are 45 semester hours of graduate credit and a thesis. The required courses are:

83:206 Problems am. 5 s.h.

81:159 Pathogenic Bacteriology am. 4 s.h.

11:11 Statistical Methods in Biomedical Sciences am. 3 s.h.

88:201 General Pathology for Dental Students am. 5 s.h.

89:202 Systematic Pathology for Medical Students am. 7 s.h.

89:211 Clerkship in Pathology am. 2 s.h.

37:10 Seminar: Cells and Tissues am. 2 s.h.

86:230 Research in Oral Pathology am. 2 s.h.

86:250 Prosthetic Processes am. 2 s.h.

86:255 Advanced Oral Pathology am. 3 s.h.

82:215 Dental Sciences Research Methodology am. 2 s.h.

88:199 Basic Oral Pathology am. 4 s.h.

Since most graduates of advanced programs in oral pathology follow academic careers, students will participate in predoc-
toral teaching in the Department as part of their education.

Special Program

The certificate program 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 mem-
bers of the graduate faculty in the Department of Oral Pathology and Diagnoses.

Although additional courses may be elected if circumstances permit or required, required courses in this program are:

86:160 Topics in Oral Pathology am. 1 s.h.

86:200 Oral Pathology and Diagnosis Literature Review am. 2 s.h.

86:205 Oral Pathology and Diagnosis Seminar I am. 1 s.h.

86:199 Basic Oral Pathology am. 4 s.h.
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Residency Program
The aim of the residency program in oral surgery is to provide preparation for specialty practice. The program is designed to combine clinical and didactic training on an individual basis. Every effort is made to adapt the program to the interests, abilities and development of the individual student; however, it is essential to meet certain functional requirements.
The recommendations of the Council on Dental Education of the American Dental Association, the Committee on Graduate Training of the American Society of Oral Surgeons and the American Board of Oral Surgery have been carefully considered in planning the structure and scope of training.
Requirements for the Master of Science degree may be completed during residency. The M.S. program comprises a three-year course of integrated didactic and clinical study, and may include a research project and the preparation of a thesis.

Residency
The residency period covers three years of hospital training, providing practical orion to hospital procedures, instruction of basic and clinical sciences, assimilation 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 necessary to this specialty. Therefore, in addition to hospital and clinical training, the resident takes advanced coursework in such subjects as applied pharmacology, surgical anatomy, pathology, physiology and microbiology, and reviews such closely-related disciplines as radiology, anesthesia, physical diagnosis and laboratory procedures.
The assumption of increased responsibility and the opportunity for critical and operating room experience are important aspects of residency training.
The resident gains clinical training in anesthesia through an assigned rotation in the Department of Anesthesiology of an 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 rotations in the University and VA hospitals. Each third-year resident is assigned a rotational basis as a clinical and didactic coordinator and assumes responsibility to qualify for examination by the American Board of Oral Surgeons.

Admission
The deadline for graduate application in oral surgery is November 1 for admission July 1 of the next year. Admission is invited to July 1 of each year for a full three-year program.
GIFV: Admission 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's representative form from applicant's reference, transcript, and letters of recommendation from the dean of the dental college from which the applicant graduated, and from two professional references.
Applicants are not required but are recommended. As a rule, applications should be submitted prior to January 1 prior to the July 1 effective date.
The graduate examination will be held on admission 1 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 support clinical practice. The facilities of the University Hospitals of the Iowa City Veterans Administration Hospital and the College of Dentistry and Medicine provide a significant environment for residency training in oral surgery.

Hospital Organizations
The organizational structure at University Hospitals includes a clinical Department of Dentistry with sections of Oral Surgery, General Dentistry and Periodontics. Under these departments, the above-mentioned Oral Surgery residency program and a one-year general practice residency are conducted.

Predoctoral Courses
DS101 Anatomy, Histology 1 s.h.
Principles and techniques in oral surgery: histology, histology and histology of teeth; human immunology; gross anatomy, gross anatomy and histology of teeth; gross anatomy, gross anatomy and histology of teeth.
DS102 Oral Diagnosis 1 s.h.
DS103 Oral Surgery 1 s.h.
Basic principles of oral surgery; basic principles of oral surgery, basic principles of oral surgery.
DS104 Anesthesiology 1 s.h.
DS105 Clinical Oral Surgery 1 s.h.
DS106 Intensive Care in Hospital Practice 1 s.h.
Organization of services to the hospital environment in the hospital, organization of services to the hospital environment in the hospital, organization of services to the hospital environment in the hospital.

Graduate Courses
DS201 Hospital Procedures 1 s.h.
Hospital and hospital, hospital and hospital procedures, general information relative to hospital patients.
DS202 Basic Science Research 4 s.h.
Basic science research, basic science research, basic science research.
DS203 Surgical Anatomy 3 s.h.
Surgical anatomy, surgical anatomy, surgical anatomy.

Additional Information

DS204 Oral Surgery 3 s.h.
Study of head and neck anatomy and function.

DS205 Oral Surgery 3 s.h.
Study of head and neck anatomy and function.

DS206 Oral Surgery 3 s.h.
Study of head and neck anatomy and function.
Predoctoral Program

The purpose of the predoctoral program in orthodontics is to enable the general practitioner of dentistry to recognize, diagnose and treat with competence simple malocclusions of the teeth.

Lecture courses guide the student in the learning of basic concepts of dental and facial growth, as well as treatment-orientation subject matter. In a laboratory course, diagnostic records are taken and evaluated, and treatment appliance kits 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 practice and a research paper, qualifies a student for the Certificate of Orthodontics. If a student satisfactorily completes a thesis based on an original research project, he or she will qualify for an M.S. degree in addition to the Certificate of Orthodontics.

Opportunities are available for research and independent study in the Department. Admissions—requires the D.D.S. degree, or its equivalent, and satisfaction of Graduate College requirements. Special facilities for research in biomechanics and craniofacial growth are available. Interaction with other departments provides learning and research opportunities in surgical orthodontics, cleft lip and palate treatment, speech pathology, animal experimentation and human growth.

Admission

The application deadline is October 1, for the class starting July 1. Application materials will be required to come to the University for interviews with the faculty of the Department.

Orthodontics

Department head: John S. Casals

Research: _Dr. J. S. Casals_ and _Dr. J. M. Casals_ developed a new method for the treatment of dental malocclusions._

Courses

88-115 Growth and Development

88-120 Orthodontics and the Biologic Foundations

88-184 Orthodontics and the Biologic Processes of Craniofacial Development

88-185 Fundamentals of Craniofacial Orthodontics

88-186 Fundamentals of Craniofacial Orthodontics (Continued)

88-187 Fundamentals of Craniofacial Orthodontics (Continued)

88-188 Fundamentals of Craniofacial Orthodontics (Continued)

88-189 Fundamentals of Craniofacial Orthodontics (Continued)

88-190 Fundamentals of Craniofacial Orthodontics (Continued)

88-191 Fundamentals of Craniofacial Orthodontics (Continued)
Pedodontics

Department head: Stephen W. V. Neal
Faculty: professors Dennis A. R. U. Jashik, Arthur H. Wagner, Franca Pees, Linda M. Pilcher, Stephen W. V. Neal
Assistant professors: Jerry C. Tomey, Jerry A. Fode, John C. von Weihen, Mary H. Noyes
Instructors: Thomas J. Kline

The Department of Pedodontics provides instruction for dental and graduate students in the prevention and treatment of dental diseases in children. Instruction combines didactic, laboratory, and clinical experiences. It gives special consideration to reviewing current literature and managing dental problems of handicapped children, and synergizes efficient treatment through proper utilization of dental auxiliary paraventional and record management.

The Graduate Program

Graduate study in pedodontics leads either to certification or a master’s degree. The program gives special emphasis to preparation for certification by the American Board of Pedodontics. It is fully accredited by the Council on Dental Education.

Students are trained in all phases of pedodontics, to permit them career choices in practice, education, or research. Approximately 40 percent of the program is devoted to advanced clinical activity, 40 percent to didactic courses and practice teaching, and 30 percent to original research.

The program comprises a core of basic and specialty courses, supplemented by elective selections determined by the student’s individual interests. Development of a minor subject area is recommended.

Dual degree programs have been arranged with several other departments. Close association with the Department of Pediatric Dentistry in the College of Medicine, and with the University Hospital School of Nursing, permits emphasis on oral rehabilitation under general anesthesia, instruction in physical diagnosis, and management of exceptional children.

Research Opportunities

Research carried out by graduate students
Predoctoral Program

The Department of Periodontology is concerned with the diagnosis, prevention and treatment of periodontal disease. Its predoctoral program combines didactic, laboratory and clinical experience, with emphasis 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 in teaching, research and specialization in periodontology. In compliance with the regulations of the Graduate College and in accordance with the requirements of the American Board of Periodontology for eligibility for certification, the program requires:

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 requires 27-38 calendar months of full-time study.

Interdisciplinary Ph.D. - Periodontal Research Program

The purpose of the program is to train dentists for an academic career in research and teaching in the field of periodontal disease. The main thrust of the program is in the accomplishment of professionally related research, with the necessary didactic and practical scientific training in the basic sciences. The program will be tailored to the prior background and interests of each trainee with direct research supervision supplied by a member of the faculty, whose own research activities and interests lie in the trainee's area of research.

Applicants to the program will be selected from individuals with a D.D.S. (or equivalent) degree, with strong preference given to applicants who also hold an M.S. degree. Applicants will be enrolled in an interdisciplinary program leading to a Ph.D. degree in either periodontics (anatomy), periodontics (biochemistry), periodontics (microbiology), periodontics (pharmacology) or periodontics (physiology). The certification program in periodontics may also be combined with this program.

Certification Program

Designed to meet all the requirements of the American Board of Periodontology for eligibility for certification, the certification program provides a sound foundation for the clinical practice of periodontics. 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 23 modern well-equipped operatories in a fully equipped facilities laboratory and core laboratory. Research laboratories include a departmental research laboratory and a core laboratory in histology and histochemistry, microbiology and biochemical, electron microscopy with SEM and scan capabilities, and growth and development. These collaborative laboratories 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 uninterrupted studies. Assistantships are offered dependent upon available resources. The interdisciplinary Ph.D. - Periodontal Research Program is supported by a full research stipend.

Admission

Admission requires the D.D.S. degree or its equivalent, and satisfaction of Graduate
Preventive and Community Dentistry

Divisão Head: W. Philip Phipps
Faculty, members: Mr. Philip Phipps
associate professors: James O. Beck, Howard H. Field, Nelson S. Lojek
instructor professors: Robert E. S. Stern, Paul K. Ketner, Dean W. William
instructor: Quinlan Thompson
Degree offered: M.S. in Community Dentistry

Programs in preventive and community dentistry are designed to provide dental students with experiences to increase their awareness of public health needs and to encourage students to develop and implement approaches to alleviate these needs. Extramural programs provide studies about opportunities to interact with health care teams and members of communities in the county. The department conducted five full-time offsite extramural programs throughout the state. Using the community as the classroom, students are able to observe and participate in a variety of activities planned to make the student aware of the societal obligations have or should assume in order to practice effectively.

Included in the Department's resources are two mobile dental vans, one with five operators and a second smaller unit designed for prevention programs. The vans are operated throughout the county, and give senior dental and hygienic students and graduate students an experience which closely simulates community dental practice.

Master of Science Program

The Master of Science degree program is designed to prepare students in community dentistry with emphasis on research, teaching, or administration. The objective of the program is to help students achieve a high degree of proficiency and specialization in their respective areas of special interest. Successful graduates of the program will have met educational requirements necessary to establish their eligibility for the American Board of Dental Public Health.

The program requires a minimum of 42 semester hours of coursework. The full-time program requires a minimum of 18 months of coursework and practices to meet the M.S. and residency requirements.

Preventive and Community Dentistry

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Removable Prosthodontics

Department head: Farzaneh D. Shourdi
Faculty: Professor Ralph C. Applegate, William E. LeVasseur, associate professor Renald L. Eltinger, Theodore M. Miller, Professor R. Saeiz
assistant professor James D. Hanrahan
Instructor Lawrence R. Register
associate professor Robert A. Shrag, John R. Thompson
Professor Dennis P. Maxwell, Boo Han Tung
Degree offered: M.S.

Removable prosthodontics is the specialty of dentistry involving complete dentures and removable partial dentures.

The predontal program provides the student with the basic principles, practices and concepts of removable prosthodontics required for the practice of general dentistry, through laboratory projects and treatment of patients offering prosthodontic needs.

The Master of Science degree program prepares the specialist in the principles of removable prosthodontics in education and research. It also satisfies the initial training requirement for eligibility for the American Board of Prosthodontics examination.

The requirements are flexible, permitting the development of a plan of study which will fill the individual needs of each student. This is possible since normally not more than two students are accepted each year for advanced training in the Department. Each student is required to prepare a thesis based on original research and pass an oral and/or written comprehensive examination. The student's advisor will serve as chairman of the examining committee. The student will be required to meet all the requirements for the master's degree as outlined in the Manual of Rules and Regulations of the Graduate College.

Minimum requirements for admission to the program correspond to the minimum requirements for admission to the Graduate College. In addition, the student must hold a D.D.S. or D.M.D. degree or its foreign equivalent. No advanced GRE is required.
The first permanent college-level department of education 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 four 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 preparation programs are also reviewed and approved by the Iowa Department of Public Instruction.

### Teacher Education Programs

The College of Education offers undergraduate programs in teacher education leading to certification in the United States 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 decide at a later date 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 Admissions, 107 Calvin Hall by May 15th preceding the academic year in which the applicant plans to enroll in professional education courses. Applications received after that date will be approved only if faculty and 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 sections of the University Catalog. Policies, rules, and regulations of these colleges apply to students in the T.E.P. Students seeking the B.G.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 to the T.E.P., students are not eligible to enroll in professional education courses before they have completed 32 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 2.00 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 readmit and be reenrolled when the required 2.00 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, and 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

To be admitted to foundation courses in education, an undergraduate student must:
Have been admitted to The University of Iowa as a degree candidate.
Have completed the American College Testing battery.
Be free of any health impairment or physical handicap which will preclude teaching success.
Have attained sophomore standing (28 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 2.50 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:
Have been admitted to the Graduate College.
Have a cumulative grade-point average of not less than 3.50 (2.70 for M.A.T.) on undergraduate coursework.
Have been admitted to a specific certification program (e.g., elementary education, special education or secondary English).

Student Teaching
The final phase of the Teacher Education Programs is the professional semester, devoted to supervised student teaching and directed observation in a variety of situations. Periodic seminars provide for discussion and evaluation of student teachers' experiences. The student teaching requirement may not be met by transfer credit except under unusual circumstances and with approval in advance.
To register for student teaching, the student must have:
Satisfactorily completed eight semester hours during one academic session in residence at The University of Iowa.
Satisfactorily completed 77-75 Educational Psychology and Measurement, 7W:91. Audiovisual Equipment for Instruction (Elementary) and 7E:100 Introduction: Elementary and Early Childhood Teaching or 7S:100 Introduction: Secondary School Teaching, or 7E:91 Pre-Education Practicum or 7E:91 Pre-Education Prac-
ticum.
Satisfactorily completed the appropriate methods courses.
Maintained a cumulative grade-point average of not less than 2.20 if an
undergraduate student, 2.50 if a graduate student, 2.70 if an M.A.T. candidate on all college work attempted, all college work attempted at The University of Iowa and all work attempted in his or her teaching major.
Fixed enrollment for an assignment by March 15 preceding the academic year during which student teaching is desired.

Waivers
Students who have completed diametrical-type experiences or courses which they feel should be considered in lieu of required courses should consult with their advisers concerning waiver procedures.

The CUTE Program
Students who feel they may better advance their educational interests through student teaching in an inner-city situation, and who are interested in working with inner-city youth, may apply to the Cooperative Urban Teacher Education (CUTE) program through the Director of Student Teaching, Iowa City, at one of several midwestern institutions which place selected students in the Kansas City inner-city system. The program is open to any student who meets the requirements for student teaching.

Overseas Student Teaching
In cooperation with the University of Wisconsin-River Falls, a split student teaching assignment is available (eight weeks in one of our regular centers and eight weeks in either Australia, England, Republic of Ireland, Scotland, or Wales). Students must make their own travel arrangements, housing will be located for the student by the on-site coordinator. Students electing this program must meet the regular requirements for student teaching.

State Requirements
Certification to teach in many states requires a course in U.S. history or American government. An initial certificate may be obtained in Iowa without meeting this requirement. However, a certified teacher who has not previously met the requirement must complete a minimum of two semester hours of U.S. History or American government before a certificate can be renewed. Students are, therefore, encouraged to include such a course in their preservice programs. Any of the following courses will satisfy the requirement:
361: Introduction to American Politics 4 s.h.
(may also be used toward social science core requirement of the College of Liberal Arts)
183: American History 1492-1877 3 s.h.
185: American History 1877-Present 3 s.h.
18:182: The Colonial Period in America 3 s.h.
18:182: American Revolution Period 1740-1798 3 s.h.
18:183: United States in the Early Republic 3 s.h.
18:184: Civil War and Reconstruction 3 s.h.
18:187: The Contemporary United States 1890-1940 3 s.h.
18:188: 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 advanced degree programs:

Master of Arts
The Master of Arts program is offered on both a thesis and non-thesis basis. The non-thesis M.A. program usually provides more specialized coursework that is found in the M.A. thesis program. The non-thesis program is not necessarily a terminal program, but students who expect to continue their studies on a doctoral program are urged to select the M.A. thesis program which offers more experience in research procedures. Students who complete a non-thesis M.A. program and are admitted to a Ph.D. program may be asked to submit evidence of writing in research skills to their advisor or division during the early part of their doctoral program.
Master of Science

Thesis and non-thesis programs are available for students desiring a concentra-
tion in science. The degree outlines and the use of the programs are similar to those
above for the Master of Arts degrees.

Master of Arts in Teaching

The M.A.T. program is a 38-semester hour (minimum) non-thesis program designed for
academically superior liberal arts graduates who included few or no professional
education courses in their undergraduate programs. The program leads to a master's
degree and certification as a secondary
teacher in such fields as art, business,
English, foreign languages, home economics, mathematics, music, and speech and drama.
A grade point of at least 2.70 on undergraduate coursework is required for admission. At least 18 semester
hours of graduate coursework in the student's proposed teaching field must be
completed. A sufficient number of semester hours of graduate work in education (not less than 20) must be taken to satisfy certification
requirements.

Specialist in Education

This degree is granted upon the completion of a pre-determined two-year, post-baccalaureate program designed for students preparing to
work professionally in the fields as teaching, administration and supervision and special services. Of the minimum of 60
semester hours required for the degree, 39 are
prescribed in the area of specialization; the
remaining credit may be earned in
cognate fields, supervised experience,
research and elective courses. The requisites
must culminate in a written report. Other
requirements and regulations applicable to the E.D.D. are the same as for the master's
degree except that 15 semester hours of
residence work on campus are required in one
dw-month period or in two summer sessions and coursework completed ten years prior to
the final examination must be evaluated to
determine the amount of credit that may be
accepted toward fulfillment of the program
requirements.

Doctor of Philosophy

The Ph.D. is the highest academic degree
and is conferred upon those students who
have demonstrated superior scholarship and
mastery of research skills in coursework as
well as in the preparation and defense of a
dissertation.

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 suitable for persons seeking salary raises, who are undecided
about course plans, or whose applications are to tests to permit processing for regular
admission into degree programs. Faculty
review committees may admit students to this program rather than 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 in early childhood education, elementary education, special education and social studies and English is the mandatory
program is limited, admission of graduate
students to this program is 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 entrance
and need only a few courses to validate or
update their certification should apply for
the Professional Improvement status. Admission to a certification only program requires a
minimum undergraduate grade-point aver-
age of 2.50.

Bulletin

Prospective graduate students should write
to the College of Education for the bulletin,
Advanced Studies in Education, which provides specific information about the
various programs, admission procedures and requirements, and rules and regulations.

Support Units and Special Resources

The Center for Educational Experimentation, Development, and Evaluation develops
proposals, conducts studies, publishes reports, and monographs, and provides pre-
and post-doctoral training. Its program relates to instructional technology, materials
and systems design and development, research, demonstration, and dissemination
of research and curricular products. It works in collaboration with federal, state and
private agencies, colleges and cooperating school districts to design and conduct
cooperative research, development, and evaluative projects.

The Computer-based Education Lab offers
hardware and consulting support for
computer applications and instructional
development related to ongoing instruction of the College of Education.

The Curriculum Laboratory provides mate-
rials primarily for students and faculty
members interested in curriculum problems. It builds into a convenient central location approximately 20,000 elementary
and secondary textbooks, reference books, courses of study, bibliographies, pamphlets
and non-print media such as filmstrip,
games, records, etc. The Laboratory also houses a 1,200-volume youth collection.

The Early Childhood Education Center
provides practical, curriculum development and
research opportunities for under-
graduate and graduate students preparing to
work with preschool children. The Center
enrolls some 84 children ages two
months to five years. Both full-day and
half-day programs are provided.

The Educational Media Laboratory houses a
variety of instructional equipment and
technologies. It facilities provide opportunities
to develop skills in design and production of
elementary instruction and in the utilization 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 videocassettes,
computer tapes, slides, films, etc. The
library, laboratories, transparencies and other mate-
rals related to instructional development.

The Educational Placement Office arranges
undergraduate teacher education students
interested in teaching positions as well as
graduate students seeking other certified
school positions. Graduate students inter-
tested 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.

The Education-Psychology Library has approximately 106,360 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 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 staff develops standardized educational tests, such as the widely-used Iowa Tests of Basic Skills and Iowa Tests of Educational Development, for use in elementary and secondary schools. This department also conducts research studies in educational measurement and evaluation, publishes brochures, sponsors lectures and symposia, provides consulting services to school systems, and provides training experience for graduate students in measurement and statistics.

North Central Association (NCA) of Colleges and Schools is the largest and most active of six regional accrediting associations in the United States; Iowa is one of 19 NCA-member states. The NCA's primary purpose is to foster improvement in education at the elementary, secondary, and collegiate levels by self-evaluation of educational programs, providing consultative services, and promoting the continual improvement of educational programs.

The Reading Clinic makes possible investigation into the fundamental causes of reading disabilities and remediation with methods of overcoming these deficiencies. It provides opportunity for observation and practice in the diagnosis and teaching of severely reading disabled.

Program for Emotionally Disturbed Children is located in the child psychiatry unit of the University's Psychiatric Hospital. Children attending this school are residential patients in the child psychiatry unit. The program is supported by the Psychiatric Hospital and administered by the College of Education. Opportunities are available for student teaching and practicum experience in school psychological services.

Statistical 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.

University Counseling Services are facilities available to students in counseling psychology for research and practicum purposes.

University Hospital School is a University-affiliated facility and, as such, strives to provide a varied balance of direct services to developmentally disabled school children, interdisciplinary training for personnel and research projects into program development and effectiveness.

The Hospital School contains two unique but integrated service sections, a residential program for physically handicapped youngsters from throughout Iowa, and a day program for youngsters from surrounding school districts who are mentally retarded. Placement of children into the facility is worked out cooperatively with parents, appropriate area education agencies and local school programs.

In addition to providing direct services to developmentally disabled youngsters, the Hospital School has two other closely related functions—specialized training for workers and trainees in all areas concerned with handicapped children, and clinical research pertaining to causes and prevention of handicapping conditions.

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, and through outreach activities for training, pre-placement and follow-up services in the community.

School Certification Services

Though each state has its own certification requirements, a majority of state certification agencies have entered into an agreement to issue certificates to applicants who have completed approved teacher education programs in institutions accredited by the National Council for Accreditation of Teacher Education. The University of Iowa teacher education programs have been approved by the Council. Students planning to major in special education are advised to be certain they will be eligible for certification if they plan to teach in a state other than Iowa.

Financial Aids

Employment in Research Facilities

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; Center for Educational Experimentation, Development, and Evaluation; Iowa Testing Program; and the Early Childhood Education Center. The Curriculum Laboratory, Educational Media Laboratory, Computer-Based Education Laboratory, and the Education-Psychology Library 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.

Graduate Assistantships

Individual and academic programs provide opportunities for teaching, research, or service assistantships, as well as fellowship and related employment opportunities. Inquiries should be addressed to the director of the division or to the director of the special program in which the student believes he or she can provide service or achieve an outstanding academic record. The Graduate Office, or the director of the student's field of study, 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.

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 or pursuing any of the advanced degree programs offered by the College of Education are eligible to apply provided they are United States or Canadian citizens. The assistantships are for the academic year only, are renewable for a maximum of three years, and, at the present, provide stipends similar to those for other assistantships. Holders are assigned to work under the direction of a qualified member in a research capacity and must carry a study or research load of at least 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 Exam (GRE) or Graduate Management Admission Test (GMAT). The application must be filed on a special form which may be obtained from the director of the Internship Program, Union Center for Measurement. The application deadline is February 1.

Loans and Outside 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 Aid.

L. A. Van Dyke Student Loan Fund

This fund has been established by former advisees, colleagues and other friends of Associate Dean Emeritus L. A. Van Dyke in recognition of his significant contributions to education in the state and the nation and is available to degree candidates in secondary education who meet the following performance requirements: seniors and graduate students of teaching in the fields of English, mathematics, social studies, science, and history, and are enrolled in the College of Education.

College of Education Graduate Awards

Awards are presented to outstanding graduate students in the College of Education at the spring semester faculty meeting of the College. These are:

- Perry Eugene McClaran Award: To the outstanding candidate for the master's degree in educational administration.
- Paul C. Pearson Award: To the outstanding candidate for the master's degree in education.
- Harvey L. Davis Award: To the outstanding student in educational administration or higher education, particularly a student interested in the financing of education.

Pi Lambda Theta Graduate Award—M.A. and Ph.D. levels: To outstanding graduate students of high scholarship, promise in the professional areas of research, teaching, or writing, and striking personal qualities.

Faculty

Members of the College of Education faculty are progressive in research and writing and are well qualified by preparation and experience. Ninety-seven percent of the members of the faculty with academic rank hold earned doctorates in their teaching fields, and 95 percent have had teaching or administrative experience in the professional schools.

A major strength of the College is its close working relationship with the College of Liberal Arts. With few exceptions, professors on the College of Education faculty also hold academic rank in the College of Liberal Arts. A majority of the professors who teach secondary school methods have doctorates in their teaching disciplines, as well as preparation in education, and hold academic rank both in their academic departments and in education.

Research and Development

The College has a strong history of commitment to educational development and research, as evidenced by the presence of the Lindquist Center for Measurement. In addition to independent research by individual faculty members, several studies are being pursued with the support of foundations and federal grants awarded to the College and individual faculty members. Most members of the faculty are active in professional societies, and several recently have held or now hold key offices in such organizations at the national level. Systematic research programs are sponsored through the Center for Educational Experimentation, Development, and Evaluation.

Nondisplacement Programs

Nondisplacement programs in the College of Education are administered by coordinators who report to the Dean of the College. Such programs include those which fall outside of the jurisdiction of one of the divisions, are inter-disciplinary in character, or are of a temporary and experimental nature.

Counselor Education

Chair: R. Richard Due, Ph.D.

过去的教授包括但不限于：John C. Davis, E. Kenneth Davis, Allen B. Head, Lombard A. Miller


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 inter-personal skills for students in other professional and graduate programs as well as some basic courses in these areas for undergraduates.

Student Development Program in Postsecondary Education

M.A. Program

Purpose: Preparation for college positions in admissions, student activities, financial aid, student union, career planning and placement, residence halls, foreign student services, community college counseling, adult continuing education, and external degree programs. And with experience as students of the College.

Admission requirements: No specific program of undergraduate study or work experience is required, although students considered inadequately prepared will be expected to arrange for make-up courses
while undergoing preclinical study. A personal interview is desirable, but not required. Applicants will ordinarily be expected to meet at least one of the following qualifications:

A 3.00 minimum undergraduate grade-point average.
A total score of at least 1,000 on the Graduate Record Examination (aptitude test).
A 550 minimum score on one of the two aptitude portions of the Graduate Record Examination.
Evidence of outstanding leadership in extracurricular activities at an undergraduate institution.
Highly successful experience in the field.
Candidates must also evidence an appropriate level of emotional balance, personality, and interpersonal skills.

Students admitted on a conditional basis will usually be required to earn a 3.00 GPA to be admitted to regular status.

Ed.S. Program

Purpose: To provide specialized professional preparation in college student development beyond the master's level for persons not planning to enter doctoral study; to prepare candidates for such positions as associate dean or dean of students in a small college or as director of admissions, student activities, financial aid, student unions, career planning and placement, residence halls, foreign student services, community college counseling service, adult continuing education and external degree programs; and with experience as college teachers.

Admission requirements: Completion of a master's degree in counseling, student personnel work or closely related areas; 3.00 grade-point average; successful experience in college student personnel work or equivalent experience is preferable.

Ph.D. Program

Purpose: To provide training in depth through an academic research-oriented curriculum which draws heavily upon the field of college student development. Prepares individuals to serve competently in such positions as counselor educator, researcher, associate dean or dean of students, or as director of admissions, student activities, financial aid, student unions, career planning and placement, residence halls, foreign student services, community college counseling service, adult continuing education and external degree programs.

Admission requirements: Same as minimum requirements for Graduate College and M.A. program. Students admitted on conditional basis will usually be required to earn a 3.00 GPA 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 the M.A. thesis or equivalent.

Counseling Psychology

Ph.D. Program

Purpose: Preparing doctoral-level counseling psychologists for positions primarily in higher education, usually with academic appointment in counseling psychology and service assignments in counseling centers. Graduates teach courses in counseling, conduct their own research and direct that of their students, supervise counselor trainees, and consult with other student services personnel. Graduates occasionally take service positions in community mental health agencies or private practice.

Admission requirements: Preferably an undergraduate major or minor in psychology, or a major in some related field (GPA of 3.00 or more); successful candidates 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 4 or March 15 concerning their applications. Very few students are admitted to the doctoral program each year.

Rehabilitation Counseling

M.A. Program

Purpose: Graduates of the program work in state rehabilitation agencies, sheltered workshops, rehabilitation centers, medical hospitals, prisons, and in other public and private agencies concerned with the rehabilitation of the handicapped.

Admission requirements: Same as minimum requirements for Graduate College. In addition, a personal interview is highly desirable. Applications are reviewed March 1 for fall admissions only.

Ph.D. Program

Graduates are prepared to provide leadership in college and university programs of rehabilitation counselor education and research programs within universities and state agencies.

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 application for not overlooking 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. thesis or equivalent necessary.

School Counselor Education

M.A. Program

Purpose: To prepare individuals to function as counselors in a variety of settings.

Admission requirements: In addition to the Graduate College's minimum requirements, the faculty of the School of Counselor Education program require a minimum undergraduate grade-point average of 3.50 and the completion of specific forms by the applicant and their references. These forms will be sent by the Office of Student Personnel, College of Education.

Ed.S. Program

Purpose: To give an individual seeking preparation beyond the master's degree an opportunity to intensify his/her competence as a counselor or student-personnel counselor.

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 must have at least
a 3.00 minimum grade-point average on all graduate study. The forms the applicant must complete in the course of registering for courses will be sent by the Office of Student Personnel, College of Education.

Ph.D. Program

Purposes: To prepare individuals for teaching, leadership, and research positions in the field of counseling. Admission requirements: The applicant must have a minimum grade-point average of 3.25 and perform satisfactorily on the Graduate Record Examination. Also, the applicant 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. An extensive range of settings in cooperating community agencies, schools and colleges as well as 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 College of Education Division hold a variety of part-time graduate assistantships. For example, many of the University's student service units award part-time assistantships to graduate students in the College Student Personnel Program. Applicants for assist-

Courses

For Undergraduates and Graduates

Counseling and Guidance

TE 51 Making a Vocational-Educational Choice 2-3.

Directed toward those students who are uncertain about their vocational and educational goals, special emphasis given to the vocational decision-making process, self-evaluation and exploration of the world of work.

TE 51 Process of Change and Self-Counsel 2-3.

Laboratory course focusing upon techniques other than face-to-face relationship repair in helping clients change in human systems. Curr 1958.

TE 1111 Human Relationships for Service Professionals 2.

Includes uniqueness of race and culture in influencing human relations.

TE 1121 The Culturally Different in Educational Settings 3-4.

Problems in teaching culturally different child of exchange; recent research on impact of disadvantaged on learning potential of students. Some T 215.

TE 1144 Sex Roles, Stereotyping and Discrimination in Education 2.

Constitution of sex role; sex stereotypes and self-stereotyping; analytical and alternative educational approaches and strategies for change discussed. Some T 215.

TE 1168 Psychosocial Aspects of Women's Roles 2.

Examination of how right sex role stress that the anatomy and human nature.

TE 1156 Psychological Aspects of Blindness and Psychopathology 2.

Course examines the body of literature which reveals that the nature of the relationship between the individual and the external environment is an essential factor in the development of any psychopathology. The total behavior of the psychological variables is discussed in the context of the dynamics of blindness. The role of the counselor in the community, and the education of the blind individual. Some T 215.

TE 1160 Values and Minority in Society 2.

The social and moral pressures in values and minority classroom activities on values and minority within the classroom.

TE 1170 Human Relations for the Classroom Teacher 2-3.

Teach about and research in values and minority classroom activities on values and minority within the classroom.

TE 1181 Special Education for the Classroom Teacher 2-3.

Course discusses various roles, life-styles and history of various disabilities in U.S. society and understanding the special educational process; special procedures and techniques; some content in communication and interpersonal human relations skills.

TE 1186 Workshop in Counseling Education 2.

Designed to provide service for the continuing education of counselors and related professionals.

TE 1180 The Drug Cultivator 2-3.

Counselor's role as a counselor, values, attitudes, and the myths, factual information on alcohol and drugs, personality correlates of drugs and abuses.

TE 1198 Group Counseling and Group Activities 2.

Integration of group process for guidance, group counseling, techniques of managing group operation. Prerequisite: participation in a recognized counselor organization and permission of instructor.

TE 1210 Training Group Procedures 2.

Small group process for personal and organizational development in educational settings, including analysis of group processes, group dynamics, group decisions, critical issues of group procedure. Prerequisites: permission of instructor. Some T 215.

TE 1213 Individual instruction in Counseling Education, Undergraduate 2.

Prerequisite: consent of instructor.

TE 1214 Counseling for Related Professions 2.

Counselor's role in counseling theory and techniques to persons who are entering professions that require them to engage in helping relationships with a client. Practical methods used to build effectiveness in skills and in self-dynamic of helping.

TE 1215 Student Appraisal Procedures 2.

Techniques for administering and interpreting student appraisal devices in elementary and secondary physical education programs; nondisciplinary test for future test battery procedures.

TE 1216 Introduction to Group Counseling 2.

Search for research, theory and application of group counseling; increased experimentation in group counseling. Some T 215.

TE 1217 Psychodynamic Counseling 2.

Examine the techniques and methods of using the therapeutic process in a psychological framework, design in the techniques of using the therapeutic intervention. Some T 215.

TE 1218 The Culturally Different 2.

Critical overview of cultural differences among both cultural and social behavior; cultural differences and their activities in counseling; cultural behavior of culturally different groups, race, cultural, and cultural characteristics. Some T 215.


Introduction to helping relationships; design to explore various aspects of helping relationships; some techniques of helping relationships; some techniques of assisting community settings. Prerequisite: consent of instructor.

TE 1228 Counseling of Children and Parents 2.

Survey of methods, procedures and research into the role of counseling the child and the parent. Prerequisite: consent of instructor. Schedule on or T 1228.

TE 1231 Foundations of Counseling 2.

Introduction to counseling; design to explore philosophical bases, process and issues surrounding counseling; assumptions; theory in counseling; classification of counseling. Prerequisite: consent of instructor.

TE 1232 Practical in Counseling Psychology 1.

TE 1233 Introduction to Rehabilitation Services 2.

Historical and legal background of rehabilitation; role of rehabilitation workers and roles of rehabilitation resources.
Educational Administration

To be eligible for recommendation by The University of Iowa for certification in Iowa to function as an elementary principal, secondary principal, or superintendent, an individual must:

Hold or be eligible to hold an Iowa Permanent Professional Teaching Certificate; have completed at least 24 graduate semester hours of credit from the University; and have a master's degree.

In addition, each certificate has these requirements:

Elementary Principal (Endorsement 11): Completion of the educational administration program with elementary school emphasis;

Secondary Principal (Endorsement 22): Completion of the educational administration program with secondary school emphasis; and

Superintendent (Endorsement 62 61): 60 semester hours of graduate work in a planned program in general school administration, including courses listed in the general school section of the Ed.S. program, or such equivalent courses as the individual's advisor recommends.

M.A. in Educational Administration

The purpose of this program is to prepare individuals for appointments as elementary or secondary school principals, central staff, or central administrators with state departments of education, or positions with state educational agencies. The thesis program is recommended for students who plan to do graduate work for an advanced degree or who have a special interest in research.

Ed.S. in Educational Administration

The purpose of this program is to prepare students for appointments as superintendents of schools, in state departments of education, area education agencies, or the U.S. Office of Education, and to assist school administrations in upgrading their administrative skills.

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.

Admission

Applicants must satisfy minimum requirements of the Graduate College. Candidates are selected through faculty review. Factors considered include grade-point average, Graduate Record Examination scores, and other evidence of academic ability and professional promise.

Courses

Educational Administration

70:116 Test the Teacher, the Law and Negligence 2 s.h.

Rights, privileges, reserve, and liability of teacher and student; negligence law, evidence, base development, settlement, jury selection, negotiation process, impact of the settlement of problems of educability relating to teaching practice and court decisions. Prerequisite: Pedagogical 724 or 7521 or consent of instructor.

70:201 Fundamentals of School Administration 2 s.h.

Introduction to organization, operation, and administration of American public education—philosophy and concepts of organization and administration, economics, political, and professional factors relating to education and school administration.

70:255 Fundamentals in Education 2 s.h.

Principles of educational data processing and consumer applications to educational administration, management information systems, instruction, and research.

70:264 Educational Systems Analysis and Operations Research 3 s.h.

Application of systems analysis and correlation research methods in educational systems, planning and design.

70:285 Secondary School Principal 3 s.h.

Role and responsibilities of secondary school administrators in planning and implementing the educational program, staff selection, utilization and improvements, including appraising student personnel service and the direction of managerial opportunities.

70:281 Elementary School Principal 3 s.h.

Organization, supervision, and administration of elementary schools, curriculum development, instructional emphasis, personnel management, and personnel relations; role of analysis and communication in management planning; current trends in administrative programs.

70:282 Elementary School Organizational Behavior 3 s.h.

Organizational approaches analyzed with specific attention directed to analyzing patterns of behavior as observed in formal instructional procedures.

70:283 Samba: Systems Evaluation in Educational Decision-Making 2 s.h.

Development of strategies, processes and mechanisms of evaluation and decision: criteria for organization, definition and retrieval of information, development of criteria for evaluation and program evaluation.

70:284 School Public Relations 3 s.h.

Relationships between public school as social institution and community, public concepts, propaganda and democratic process; agents of interpretation; media and principles emphasized on field work.

70:291 Administration of Professional Personnel 3 s.h.

Problems of administering personnel, including personnel employment, induction, in-service development, salary, and collective bargaining.

70:293 School Building and Site 3 s.h.

Comprehensive study of planning of educational facilities, from identification of need through utilization of the facility, including developing educational specifications, evaluation of architectural selection, financing awards, legal aspects.

70:295 Individual Instruction in Educational Administration 3 s.h.

Prerequisite: consent of instructor.

70:296 Data and Hypothesis Testing in Public Education 3 s.h.


70:298 Financial Management of Local School Systems 3 s.h.

Overview of school business administration and role of school business officer, with emphasis on fiscal management, including budgeting processes, uniform billing practices, and state and local bonding practices.

70:299 Theory in Administration 3 s.h.

A review of theory and organizational behavior in educational systems application of developing educational structure to the description, analysis, and methodology of administrative behavior.

70:300 Legal Aspects of School Personnel 3 s.h.

Emphasis on the teacher and student with some references to the principal, superintendent, board member and parents including legal aspects of school personnel; professional responsibilities of school personnel; pertinent principles of law derived from court cases; constitution and statutes in personnel practices. Designed for teachers and administrators.

70:301 Legal Aspects of School 3 s.h.

Emphasis on the teacher and student with some references to the principal, superintendent, board member and parents, and professional responsibilities of school personnel; pertinent principles of law derived from court cases; constitution and statutes in personnel practices. Designed primarily for administrators but available to teachers.

270 EDUCATION/Educational Administration
Early Childhood Education

Early childhood teaching requires an understanding and appreciation of young children from infancy through the early elementary school years, and a commitment to encouraging and enhancing the growth and development of the total child. Preparation for early childhood education involves study of child development, parent-child relationships, and organization and administration of child care 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 classrooms or centers. 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 and meets the requirements of the Illinoisendorsement number 53 for prekindergarten/kindergarten teachers.

Students interested in dual certification at the prekindergarten/kindergarten level and the kindergarten/elementary level should follow the elementary education program with the early childhood area of specialization resulting in endorsement numbers 10 and 53.

Program Requirements

Special Core Requirement

Students majoring in early childhood education must complete the special science-mathematics foundation designed for them. Completion of this core requirement is a prerequisite to enrolling in TE 116 Methods (Elementary School Science and TE 113 Methods, Elementary School Mathematics). This prerequisite may be satisfied in one of three ways:

1. Satisfaction of the special courses 97.55-68. and 228.60, or
2. Satistically equivalent of courses at another four-year approved institution.

Prior completion of 8.0 of other science end mathematics courses which satisfy the College of Liberal Arts natural science core requirement, and the passing of special tests dealing with the content of:

Program Courses
Students not passing the science examination must register for 197:104. Students not passing the mathematics examination must register for 293:30.

**Foundations Courses**

7E:100: Introduction to Elementary and Early Childhood Teaching 3 h.
7E:110: Audiovisual Equipment for Instruction 1 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 h.
7P:106: Child Development 3 h.
3:14 Introduction to Child Psychology 3 h.
17:1L Nutrition Work with Children 3 h.
17E:120: Methods and Materials in Music for the Classroom Teacher 3 h.
17E:120: Methods and Materials in Art for the Classroom Teacher 3 h.
17E:126: Literacy and Storytelling for Children 3 h.
7E:157: Methods of Early Childhood Education I 3 h.
7E:291: Pre-Education Practicum (to be taken concurrently with 7E:187) 1 h.
7E:291: Methods of Early Childhood Education II 3 h.
7E:291: Pre-Education Practicum (to be taken concurrently with 7E:187) 1 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 h.
42:125 Child Care Campaigned Development and Administration 3 h.
7U:123: The Culturally Different in Educational Settings 3 h.
7E:165: Methods: Multicultural-Bilingual Education 3 h.
7E:166: Multicultural Concepts and Educational Systems 3 h.

**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:126 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.

Students seeking Iowa Department of Public Instruction approval to teach preschool handicapped students must complete the following courses:

7U:130: Exceptional Children 3 h.
7U:135: Mental Retardation 3 h.
7U:135: Orientation to Rehabilitation of the Physically Handicapped Child 3 h.
7U:120: Methods of Teaching Preschool Handicapped 3 h.
3:118: Psychology of Language II 3 h.
7U:193: Laboratory Practice in Decision Making of Various Education Handicapped Children 7 h.

The student should consult with their 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 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 of 3-12 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 broad general education background, in-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 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 sixth grade. Special sequences are also available for students seeking the preschool/prekindergarten kindergarten endorsement and for those seeking approval for teaching in middle schools or junior high schools.

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 certification must make a separate application to each program and these applications will be considered independently.

**Program Requirements**

**Special Core Requirement**

See description under Early Childhood Education.

**Foundation Courses**

7E:91: Educative Practicum or equivalent experience (7E:31 must be taken concurrently with 7E:100) 2 h.
7E:100: Introduction: Elementary and Early Childhood Teaching 3 h.
7P:79: Educational Psychology and Measurement 3 h.
7F:9: Audiovisual Equipment for Instruction 1 h.

Undergraduate students should consult these in their sophomore year. Graduate students may elect equivalent graduate-level courses with the approval of their advisors.
Methods Sequence
7E:160 Methods: Elementary School Language Arts 3 s.h.
7E:181 Methods: Elementary School Social Studies 3 s.h.
7E:182 Methods: Elementary School Science 2 s.h.
7E:183 Methods: Elementary School Mathematics 2 s.h.
7E:14 Methods: Elementary School Reading 3 s.h.

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 Elementary School or 7E:192 Laboratory Practice in Elementary School; 7U:191 Laboratory Practice in Education of the Physically Handicapped Child; and 7E:198 Supervised Teaching in an Early Childhood Center may also be make 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, bilingual education, early childhood, health education, elementary language arts, elementary mathematics, multicultural education, elementary music, elementary reading, elementary physical education, 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 two-week 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 in any of the three semesters if the student wishes to complete one of the three semesters in a different area. If the option is offered to them.

Graduate Programs
M.A. in Elementary Education

This degree program, which may be taken with (30 s.h. minimum) or without (24 s.h. minimum) thesis, is designed to prepare master's candidates in elementary education to serve as team leaders, grade-level or subject area supervisors, or curriculum consultants. Successful completion of this degree together with four years of successful teaching experience qualifies the student for certification as an elementary school supervisor, Iowa endorsement number 12.

Only one course (Elementary Curriculum, is specifically required of all candidates but each candidate must select at least one course from at least three of the following areas: social foundations, educational psychology and measurement, and supervision. In addition, each candidate must complete an area of specialization and select coursework in advanced methodology.

M.S. in Elementary Science

This degree program, which may be taken with (30 s.h. minimum) or without (24 s.h. minimum) thesis, is designed to prepare master's candidates in elementary education to serve as grade-level 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 10. Prior to completion of the degree, the applicant must have had one year of successful teaching experience.

Four courses are required of all candidates:

7E:252 Research Techniques in Teaching Science in the Elementary School 3 s.h.
7E:302 The Science Curriculum in the Elementary School 2-3 s.h.
7S:200 Seminar: Science Education 1 s.h.
7E:252 Current Readings in Science Education 2 s.h.

In addition, all candidates must complete a concentration of 12-20 s.h. of coursework in at least two science areas. Courses selected for the concentration, and all remaining elective hours, must be approved by the advisor.

M.A. in Developmental Reading

This program, which may be taken with (30 s.h. minimum) or without (24 s.h. minimum) thesis, is designed to prepare graduate students for inservice as reading specialists in kindergarten and grades 1-12. Successful completion of this program, together with four years of successful teaching experience, qualifies the student for certification as a Reading Specialist, Iowa endorsement number 54.

The following are required of all candidates:

7E:171 Reading Clinic: Teaching Techniques 2-3 s.h.
7E:192 Reading Clinic: Teaching Practicum 2 s.h.
7E:261 Building Foundations for Reading: Pre-Primary and Primary 2-3 s.h.
7E:265 Supervision of Intermediate Grade Reading 3 s.h.
7E:194 Methods: High School Reading 3 s.h.
7E:264 Seminar: Elementary Reading 2-3 s.h.
7E:264 Seminar: Secondary Reading 2-3 s.h.

In addition, candidates must complete one or more courses in the curriculum, supervision, and social foundations areas. Remaining elective hours are selected with the advice of the advisor.

Ph.D. in Elementary Education

The purpose of this program is to prepare students for the doctoral university teaching and research positions in elementary education and for research, curriculum, supervisory, or administrative positions in public school systems and governmental educational agencies.

The program requires a minimum of 90 semester hours, including hours earned for the dissertation. The plan of study for each student is prepared on an individual basis in consultation with an adviser. The final plan of study must be approved by the adviser and the Division chair.

As a general guideline, each student is expected to have a good general background in all facets of elementary school education, and to have a very strong area of specialization in at least one topic. Commonly selected specialization areas are...
elementary school administration, children's literature, early childhood curriculum, language arts, mathematics, reading, and social studies.

Each doctoral student must also complete a cognate or related field/concentration. The extern field may be a professional specialization, such as educational psychology and measurement, special education, or general social administration or it may be a subject field, such as English.

In addition, all students must demonstrate co-proportionate proficiency 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 undergraduate majors enrolled in ESE Pre-Practicum; 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 hr. This is in addition to completing all degree requirements. Holders of assistantships must register for a minimum of nine semester hours per semester.

All assistantships are awarded on a competitive basis. Tuition costs for an assistantship are less than the costs normally associated with a graduate assistantship. The assistantship is available to full-time graduate students and is available to part-time graduate students on a semester-by-semester basis.

Courses

**5271 Methods and Materials: Elementary School Physical Education** 2 hr.
- 5272 Methods and Materials: Secondary School Physical Education** 2 hr.
- 5273 Intermediate Scout Program: Scouting; Practicum; 2723; 7273; 7274
- 5274 Work with Children and Teachers in Elementary School and Early Childhood Centers at least ten hours per week for each semester hour of credit; basic objective is to help student teachers assume their own possibilities and interest in teaching as a career. Elementary education emphasis should register for 4 semester hours concurrently with 5274; early childhood majors should register for 1 semester hour concurrently with 5274; one semester hour concurrently with 5274.
- 5275 Introduction to Early Childhood 2 hr.
- 5276 Introduction to Education** 2 hr.
- 5277 Basic Work with Children: Early childhood approaches to teaching: various activities in early education of children. Practicum: 5277 and consent of instructor. Same as 5172.
- 5278 Methods and Materials in Speech and Hearing Emphasis on: language development; special education with 5278, which provides a minimum of 120 hours of supervised field practice in early childhood education programs. Primarily for speech pathology and audiology majors. Practicum: consent of instructor.
- 5279 Workshops in Experiential Science Science Study Program in Elementary Science** 2 hr.
- 5280 Workshops in Experiential Science Science Study Program in Elementary Science** 2 hr.
- 5281 Workshops in Experiential Science Science Study Program in Elementary Science** 2 hr.
- 5282 Workshops in Experiential Science Science Study Program in Elementary Science** 2 hr.
- 5283 Workshops in Experiential Science Science Study Program in Elementary Science** 2 hr.
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- 5296 Workshops in Experiential Science Science Study Program in Elementary Science** 2 hr.
- 5297 Workshops in Experiential Science Science Study Program in Elementary Science** 2 hr.
- 5298 Workshops in Experiential Science Science Study Program in Elementary Science** 2 hr.
- 5299 Workshops in Experiential Science Science Study Program in Elementary Science** 2 hr.
- 5300 Workshops in Experiential Science Science Study Program in Elementary Science** 2 hr.
- 5301 Workshops in Experiential Science Science Study Program in Elementary Science** 2 hr.
- 5302 Workshops in Experiential Science Science Study Program in Elementary Science** 2 hr.
- 5303 Workshops in Experiential Science Science Study Program in Elementary Science** 2 hr.
- 5304 Workshops in Experiential Science Science Study Program in Elementary Science** 2 hr.

**5275 Methods and Materials: Music for the Classroom Teacher** 2 hr.
- Development of music skills, techniques, and a variety of methods and materials for teaching music in elementary music education majors.
- **5281 Elementary School Physical Education** 3 hr.
- Methods, materials, curriculum development and improvement of physical education, preparation for elementary education majors. Practicum: 5281; Same as 5181.
- **5282 Methods and Materials: Art for the Elementary Teacher** 2 hr.
- Composition and studio. Same as 5182.
- **5283 Children's Literature** 2 hr.
- Survey of literature intended for children. The function of children's literature, its products, and reading progress. Progress, history, and objectives for literature for children. The nature of these books and some trends in use of management and study skills.
- **5284 Literature and Storytelling for Children** 2 hr.
- Survey of children's books, art and use, assignment for storytelling, storywriting, and sharing. Grading: Strong emphasis on specific and practical techniques available for successfully communicating stories to children through books and related media. Practicum: 5284; Same as 5184.
- **5285 Workshop: Introduction to Technology: People-Environment for K-12 Science Curriculum** 2 hr.
- Introduction to methods and activities available to provide K-12 students with opportunities and practices appropriate to the study of current and future science technological problems and issues. Same as 5285.
- **5286 Implementation of Technology People-Environment for K-12 Science Enrichment** 2 hr.
- Consideration of activities, materials, and implementation strategies which facilitate learning when the elementary school student is unfamiliar with the content, disadvantaged, or otherwise.
- **5287 Implementation of Technology People-Environment for K-12 Science Enrichment** 2 hr.
- Consideration of activities, materials, and implementation strategies which facilitate learning when the elementary school student is unfamiliar with the content, disadvantaged, or otherwise.
- **5288 Workshop: Introduction to Debate** 2 hr.
- Debate as a technique to teach mathematics. A. Consideration of different methods of teaching mathematics.
- **5289 Workshop: Introduction to Teaching Mathematics** 2 hr.
- A. Consideration of different methods of teaching mathematics.
- **5290 Workshop: Introduction to Teaching Mathematics** 2 hr.
- A. Consideration of different methods of teaching mathematics.
- **5291 Workshop: Introduction to Teaching Mathematics** 2 hr.
- A. Consideration of different methods of teaching mathematics.
- **5292 Workshop: Introduction to Teaching Mathematics** 2 hr.
- A. Consideration of different methods of teaching mathematics.
- **5293 Workshop: Introduction to Teaching Mathematics** 2 hr.
- A. Consideration of different methods of teaching mathematics.
- **5294 Workshop: Introduction to Teaching Mathematics** 2 hr.
- A. Consideration of different methods of teaching mathematics.
- **5295 Workshop: Introduction to Teaching Mathematics** 2 hr.
- A. Consideration of different methods of teaching mathematics.
72:119 Play in the Classroom 3 x h.
Designated primarily for experience-teach-learn, to improve the development of social thought in the younger and formal-operational stages. Major emphasis is on learning through play which is played by children to obtain, define, clarify and alter from the data.
72:22 Essay Model Workshop 1 x h.
72:118 Psychology of Children 3 x h.
Quantitative, qualitative, and developmental aspects of child growth, environment, and educational value. The value of education is emphasized, and the role of education in the socialization process is discussed.
72:10 History of the United States 3 x h.
The history of the United States is covered, from the early years of European settlement to the present day. The focus is on the major events, figures, and trends that have shaped the nation.
72:20 Early Childhood Education 1 x h.
72:123 Child Psychology 3 x h.
The psychology of children, from conception to adolescence, is examined in terms of cognitive, emotional, social, and physical development.
72:30 Early Childhood Education 3 x h.
A comprehensive study of the educational needs of children from birth to age 8, with a focus on the development of the whole child.
72:20 Education for Children: The Need for Standards and Learning 3 x h.
This course is designed to provide an understanding of the importance of standards in education and how they are developed and implemented at various levels. The course is intended for educators, policymakers, and other stakeholders in the education landscape.
72:125 Individuals with Disabilities 3 x h.
This course examines the issues faced by individuals with disabilities, including the barriers they face and the policies and practices that can help them succeed.
72:25 Principles of Social Education 3 x h.
The principles of social education are explored, including the role of the teacher, the role of the student, and the role of the community.
72:126 Professionalism in Early Childhood 3 x h.
The course is designed to help early childhood educators develop professionalism by focusing on ethical, legal, and social issues.
72:20 Educational Research Methods 3 x h.
This course provides an introduction to the methods and techniques used in educational research. The course is designed to help students develop the skills needed to conduct research in their own areas of interest.
72:30 Foundations of Early Childhood Education 3 x h.
This course provides an introduction to the history, philosophy, and theory of early childhood education. The course is designed to help students develop a critical understanding of the field.
72:20 Science and Technology Education 3 x h.
This course provides an introduction to the role of science and technology in education, including the integration of technology into the classroom. The course is designed to help students develop the skills needed to teach science and technology effectively.
72:126 Social Studies Education 3 x h.
This course provides an introduction to the role of social studies in education, including the integration of social studies into the classroom. The course is designed to help students develop the skills needed to teach social studies effectively.
72:20 Children's Literature 3 x h.
This course provides an introduction to the role of children's literature in education, including the integration of literature into the classroom. The course is designed to help students develop the skills needed to teach literature effectively.
72:20 Reading and Writing 3 x h.
This course provides an introduction to the role of reading and writing in education, including the integration of these skills into the classroom. The course is designed to help students develop the skills needed to teach reading and writing effectively.
72:126 Multicultural Education 3 x h.
This course provides an introduction to the role of multicultural education in education, including the integration of multicultural perspectives into the classroom. The course is designed to help students develop the skills needed to teach multicultural education effectively.
72:20 Educational Technology 3 x h.
This course provides an introduction to the role of educational technology in education, including the integration of technology into the classroom. The course is designed to help students develop the skills needed to teach educational technology effectively.
72:126 Professional Development 3 x h.
This course provides an introduction to the role of professional development in education, including the integration of professional development into the classroom. The course is designed to help students develop the skills needed to teach professional development effectively.
72:20 Educational Psychology 3 x h.
This course provides an introduction to the role of educational psychology in education, including the integration of psychological perspectives into the classroom. The course is designed to help students develop the skills needed to teach educational psychology effectively.
72:126 Classroom Management 3 x h.
This course provides an introduction to the role of classroom management in education, including the integration of management skills into the classroom. The course is designed to help students develop the skills needed to teach classroom management effectively.
Candidates must develop concentrations in at least two fields, chosen from the four areas designated above, plus measurement, statistics, and reading disabilities. Candidates normally write comprehensive examinations covering their chosen fields of concentration. Alternative, individually structured procedures may be developed by the student's advisor in consultation with the student and the other members of the student's committee.

M.A. in Educational Measurement and Statistics

This degree program also may be taken with a thesis (30 s.h. minimum) or without (32 s.h. minimum), it is intended to provide minimal training for the student seeking to qualify for a position which calls for special competence in educational measurement and research methodology. Such positions are typically found in larger school systems, state departments of instruction, test publishing organizations, or research centers.

Admission requirements are the same as those established by the Graduate College, except that if the candidate's GRE total score is less than 1300, and no offsetting evidence of superior ability is available, the admission may be conditional. A background in college mathematics and an experience as a teacher or researcher are highly desirable but not required for admission to the program.

All students are required to complete a common core of courses totaling 18-20 semester hours. Courses comprising this core include a graduate-level survey-type course in educational psychology, an introductory course in classical statistical methods, a course in Bayesian statistical methods, a course in educational research methodology, a course in test construction, and a course in educational measurement and evaluation.

Elective courses (12-14 s.h. minimum) must include at least one course offered by the divisions of Elementary, Higher, or Post-secondary and Continuing 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.
In the final semester, candidates must write two three-hour or two two-hour comprehensive examinations. These examinations must include the fields of educational measurement and applied statistics. The third examination, if any, will cover educational psychology or an alternative area approved by the advisor.

M.A. in Reading Disability

Only a nonthesis (32 hour) minimum program is available in reading disability. The purpose of the program is to provide training in the diagnostic teaching of reading. Satisfactory completion of the program leads to endorsement (certification) as a reading clinician. Graduates may return to classroom teaching or serve as reading clinicians, resource teachers, or consultants. In addition to admission requirements of the Graduate College, applicants for admission to the M.A. program in reading disability must have had two years of successful teaching experience.

The program requires completion of a core common of coursework totaling 16 semester hours. Courses included in this core are:

**7P:170 Introduction to Psychology of Reading** 3-4 s.h.
**7P:190 Reading Clinic: Diagnosis** 2-3 s.h.
**7P:150 Educational Measurement for the Classroom Teacher** 2-3 s.h.
**7U:251 Individual Intelligence Testing** 3-4 s.h.

In addition, each candidate must complete at least five semester hours of practicum-type courses chosen from an approved combination of:

- **7E:171 Reading Clinic: Teaching Techniques** 2 s.h.
- **7E:129 Reading Clinic: Teaching Practicum** 2-3 s.h.
- **7E:380 Reading Clinic: Supervision seminar** 3 s.h.
- **8P:370 Teaching is 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 counseling.

All students are required either to write a three-hour comprehensive examination in reading disability and write two 90-minute comprehensive examinations in related fields, or to complete a project in lieu of one or more of the written examinations. The project will involve the investigation of a problem comparable to those encountered by a reading clinician or consultant in the field.

**Ph.D. in Educational Psychology**

The purpose of this program is to provide training which will qualify graduates to teach educational psychology and to conduct research in this field.

Admission requirements are the same as those established by the Graduate College, except that the candidate's GRE total score is 1200 or 1100 for either evidence (GPAs, academic preparation, and experien-
tial) warrants it, admission will be conditional. In such cases, the student must achieve regular status within two sessions of registration (16-20 semester hours total) to continue in the program.

Teaching experience is desirable but not required for admission.

Qualified candidates who do not hold M.A. degrees will be admitted to the M.A. program (with thesis) and must earn that degree prior to formal acceptance into the Ph.D. program. A minimum of 72 s.h. is required for the Ph.D. degree but the typical student finds it necessary to earn 90 or more semester hours of credit to satisfy the degree requirements.

If a candidate is admitted to the Ph.D. program on the basis of an M.A. degree without thesis, the candidate must complete a project comparable to a master's thesis. The project must be completed before the writing of Ph.D. comprehensive examinations.

Specific minimal course requirements include 17 s.h. of statistics and research methodology, including at least one course in educational or psychological measurement, and three courses (9 s.h.) from the general areas of teaching and learning and developmental processes, with at least one course from each area.

The written comprehensive examinations, normally totaling nine hours, are chosen from two or more of these areas: general educational psychology, human development, learning motivation, and instructional design.

In lieu of a written examination in one of these areas, the student may design a project approved in advance by his or her committee and the dean of the College. This project will involve the comprehensive use of an analytical, evaluative skills or research creativity. It will demand a command of skills equivalent to sophistication to those demonstrated on a written examination. Ten or more semester hours of credit may be earned in the form of dissertation credit. The first requirement consists of an oral defense of the completed dissertation.

**Ph.D. in Educational Measurement and/or Statistics**

The purpose of this program is to prepare students for high-level professional positions in educational measurement, evaluation, and statistical methods. Such positions are frequently found in colleges and universities, state departments of instruction, public and private school systems, test publishing firms, and research or evaluation centers.

Admission requirements are the same as those established by the Graduate College except that the candidate's GRE total score is below 1000 and no offering evidence of superior ability in available, admission may be on a conditional basis. In such cases, the student must achieve regular status within two sessions (16-20 semester hours total) of registration to continue in the program.

Students expecting to concentrate in statistics should have training in college mathematics through multivariable differential and integral calculus; the calculable requirement may be met within the first year of residence study. At least one year of professional experience in teaching, research, or related fields is highly desirable. Qualified candidates who do not hold M.A. degrees will be admitted to the M.A. program (with thesis) and must earn that degree prior to formal acceptance into the Ph.D. program.

The program requires a minimum of 90 s.h. In addition to the common core courses listed for the M.A. degree, typical programs include advanced work in educational measurement and scaling of measures, classical and Bayesian methods of data analysis, research methodology and the planning of experiments, educational psychology; and the Ph.D. thesis (12 or more s.h.). Candidates who enter the
Financial Aids
The Division normally employs two graduate students to teach assistantships in educational psychology and two in educational statistics. These are half-time academic-year appointments and holders are permitted to carry a summer and research load of up to 6.5 clock hours per semester. Persons desiring to be considered for educational psychology or educational measurement and statistics are eligible candidates. Inquiries should be directed to the chairman of the Division.

Other types of graduate assistantships are supported by the Iowa Tests of Basic Skills and the Iowa Test of Educational Development. Duties are varied, including such responsibilities as test development, test norming, and coding with teachers in the field whose pupils have participated in these testing programs. There are also a few other assistantships supported by the Iowa Testing Programs which are not specific to the two programs cited above. Inquiries should be directed to the program directors.

Courses

Ph.D. in Educational Psychology with Concentration in Reading Disability

Students are expected to meet the admission and degree requirements of the Educational Psychology Ph.D. degree program, except that one of the written examinations may be in the area of reading disability, and the dissertation topic must be chosen from this area.

In addition to pertinent courses offered by the divisions of Special, Early Childhood and Elementary, and Secondary Education, the elective portion of the student's course program includes advanced courses offered by the Department of Speech Pathology and Audiology, the Department of Linguistics, and courses selected from the development psychology program of the Department of Psychology.

The Division normally employs two graduate students as teaching assistants in educational psychology and two in educational statistics. These are half-time academic-year appointments and holders are permitted to carry a summer and research load of up to 6.5 clock hours per semester. Persons desiring to be considered for educational psychology or educational measurement and statistics are eligible candidates. Inquiries should be directed to the chairman of the Division.

Other types of graduate assistantships are supported by the Iowa Tests of Basic Skills and the Iowa Test of Educational Development. Duties are varied, including such responsibilities as test development, test norming, and coding with teachers in the field whose pupils have participated in these testing programs. There are also a few other assistantships supported by the Iowa Testing Programs which are not specific to the two programs cited above. Inquiries should be directed to the program directors.

Courses

Ph.D. in Educational Psychology and Measurement

Students are expected to meet the admission and degree requirements of the Educational Psychology Ph.D. degree program, except that one of the written examinations may be in the area of reading disability, and the dissertation topic must be chosen from this area.

In addition to pertinent courses offered by the divisions of Special, Early Childhood and Elementary, and Secondary Education, the elective portion of the student's course program includes advanced courses offered by the Department of Speech Pathology and Audiology, the Department of Linguistics, and courses selected from the development psychology program of the Department of Psychology.
3.24 Advanced Child Development
3.24.1 Systematic examination of personality, development, and child care theory. 3.24.2 Psychobiology of child development. 3.24.3 Development in adolescence and adulthood.

3.25 Pediatric Psychology
3.25.1 Adolescent and Adult Mental Health
3.25.2 Assessment and diagnosis of psychological disorders in children and adolescents. 3.25.3 Development in adolescence and adulthood.

3.26 Educational Psychology
3.26.1 Functions of Educational Psychology
3.26.2 Research in educational psychology. 3.26.3 Applications of educational psychology.

3.27 Psychological Assessment
3.27.1 Assessment of personality, intelligence, aptitude, and achievement.

3.28 Personality and Individual Differences
3.28.1 Theories of personality and individual differences. 3.28.2 Research methods in personality and individual differences.

3.29 Health Psychology
3.29.1 Health psychology and behavior. 3.29.2 Health psychology and behavior: applications in health care.

3.30 Educational Psychology
3.30.1 Functions of Educational Psychology
3.30.2 Research in educational psychology. 3.30.3 Applications of educational psychology.

3.31 Counseling Psychology
3.31.1 Theories and models of counseling. 3.31.2 Research methods in counseling psychology.

3.32 School Psychology
3.32.1 Functions of School Psychology
3.32.2 Research in school psychology. 3.32.3 Applications of school psychology.

3.33 Educational Neuroscience
3.33.1 Theories and models of educational neuroscience. 3.33.2 Research methods in educational neuroscience.

3.34 Educational Technology
3.34.1 Functions of Educational Technology
3.34.2 Research in educational technology. 3.34.3 Applications of educational technology.

3.35 Educational Psychology
3.35.1 Functions of Educational Psychology
3.35.2 Research in educational psychology. 3.35.3 Applications of educational psychology.

3.36 Counseling Psychology
3.36.1 Theories and models of counseling. 3.36.2 Research methods in counseling psychology.

3.37 School Psychology
3.37.1 Functions of School Psychology
3.37.2 Research in school psychology. 3.37.3 Applications of school psychology.

3.38 Educational Neuroscience
3.38.1 Theories and models of educational neuroscience. 3.38.2 Research methods in educational neuroscience.

3.39 Educational Technology
3.39.1 Functions of Educational Technology
3.39.2 Research in educational technology. 3.39.3 Applications of educational technology.

3.40 Educational Psychology
3.40.1 Functions of Educational Psychology
3.40.2 Research in educational psychology. 3.40.3 Applications of educational psychology.

3.41 Counseling Psychology
3.41.1 Theories and models of counseling. 3.41.2 Research methods in counseling psychology.

3.42 School Psychology
3.42.1 Functions of School Psychology
3.42.2 Research in school psychology. 3.42.3 Applications of school psychology.

3.43 Educational Neuroscience
3.43.1 Theories and models of educational neuroscience. 3.43.2 Research methods in educational neuroscience.

3.44 Educational Technology
3.44.1 Functions of Educational Technology
3.44.2 Research in educational technology. 3.44.3 Applications of educational technology.

3.45 Educational Psychology
3.45.1 Functions of Educational Psychology
3.45.2 Research in educational psychology. 3.45.3 Applications of educational psychology.

3.46 Counseling Psychology
3.46.1 Theories and models of counseling. 3.46.2 Research methods in counseling psychology.

3.47 School Psychology
3.47.1 Functions of School Psychology
3.47.2 Research in school psychology. 3.47.3 Applications of school psychology.

3.48 Educational Neuroscience
3.48.1 Theories and models of educational neuroscience. 3.48.2 Research methods in educational neuroscience.

3.49 Educational Technology
3.49.1 Functions of Educational Technology
3.49.2 Research in educational technology. 3.49.3 Applications of educational technology.

3.50 Educational Psychology
3.50.1 Functions of Educational Psychology
3.50.2 Research in educational psychology. 3.50.3 Applications of educational psychology.
Instructional Design and Technology

Dep. - Lubell A. Scholtz
Faculty: professors: Lubell A. Salter, Lawrence M. Smith
associate professor: Bobbi B. Brown, Linda C. Chaysen
William S. Glasssey
Assistant professor: Barry D. Batt, John A. Hurwitz, Paul P. Koster, Marvin Lewis, Michael Lui, Harriet L. Logan and Caron L. Nettler, Barbara Rosson
Degrees: M.A., Ed.D., Ph.D.

Undergraduate Program

The Division does not offer an undergraduate degree. There are, however, a number of courses open to undergraduate students.

Graduate Programs

The general goal of the graduate program in Instructional Design and Technology is to help students acquire and engage in research and development extending knowledge related to the systematic development of instruction. This includes knowledge about how students learn, and the full range of methods and materials by which such learning can be facilitated. Because such a goal requires that the student be given a broad perspective, the program is strongly interdisciplinary. Available areas of specialization are administration, computer applications, evaluation, instructional development, instructional psychology, media production, visual studies, and health sciences education. Programs can be planned in such a way as to lead to the media specialist endorsement in learning/teaching (endorsement 39).

M.A. Program

Minimum total semester hours required: 35 s.h.

Purpose: To provide a broad background in instructional design and technology for classroom teachers or for those who plan careers as instructional designers and technology specialists in education, business or industry. May be taken with or without thesis.

Admission: A minimum GPA of 2.50 on all previous coursework and a composite GRE (Quantitative plus Verbal) of at least 1000 are required for regular admission. Students with GRE compositions of less than 1000 and/or grade-point averages below 3.00 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 GPA of 3.00 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 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 3.20 on all previous graduate work is required for regular admission.

Courses

THD-353 Audiovisual Equipment for Instruction 3 s.h.

Introduction to the operation of audiovisual equipment most frequently available to the classroom teacher, including an audio and motion picture projector, sound and color tape recorders, duplicating and copying machines, data processing devices, and printing devices.

THD-355 Selection and Use of Media in Instruction 3 s.h.

Overview of educational media and its application in the classroom with particular emphasis on the selection and evaluation of media appropriate for given instructional objectives; among media discussed are still and motion pictures, audio and videocassette, graphic displays, and computer.

THD-357 Design and Psychology of Media for Instruction 4 s.h.

Techniques related to design and production of flat pictures, transparencies, slides and films; audio and video tapes; motion pictures; and other media which can be used in education.

THD-358 Communication Through Words 3 s.h.

Scientific and practical principles for planning, creating, and using spoken, written, visual, and group communication. The educator, journalist, advertiser, and media professional who will be responsible for preparing reports, advertisements, displays, and related communications. No art experience required.

THD-359 Communication and Media Message Design 3 s.h.

Stereotyped media images, control, and criticism of messages; media characteristics; media selection and communication strategies. Includes practice in media selection and message construction. Same as 356-159.

THD-361 Workshop in Instructional Design and Technology 3 s.h.

THD-365 Introduction to Instructional Design and Technology 3 s.h.

Professional roles, responsibilities, and goals. Prerequisite: THD-100 or consent of instructor.

THD-371 Budgeting Learning Programs for Health Sciences Education 3 s.h.

Design and to provide instructional budgeting on such topics as the systems approach to instructional design, writing educational objectives, construction of individualized instructional packages, and development of evaluation tools, writing objective examinations, and affective evaluation; students are expected to co-coordinate a budget for a small instructional package, including all code-related activities, and write an all-inclusive package for use in their learning activities. Same as 381-101, THD-151.

THD-372 Learning Strategies for Health Care Professionals 3 s.h.

Role of health specialist as teacher, learner, writer, evaluator of learning strategies employed through discussion, peer review, and leadership activities individualized to meet various learning background and abilities.

THD-373 Photography for Instruction 3 s.h.

Planning and preparation of instructional materials utilizing color and motion pictures and photography. Basic while elective; major project required.

THD-386 Films in the Classroom 3 s.h.

Visual lecture course, positive classroom experiences for future teachers teaching students in classes using photographic film as a means to learn subject matter content.

THD-390 Introduction to Programming Learning 3 s.h.

Planning and execution of instructional learning, classroom learning and office devices for use in instructional learning, programming techniques for automatic learning, human-computer interaction.

THD-391 Videotape in Education 3 s.h.

Planning and production of educational video for instructional applications; operation of VTR equipment, lighting, actors, filming, editing, and production for videotape presentation; production and evaluation criteria and guidelines for evaluation; practical experience in working with production teams for the production and transmission.

THD-392 Computers in Education 3 s.h.

Special Topis in Instructional Design and Technology 3 s.h.

Designed to cover areas of special interest for selected groups of students.

THD-395 Independent Study Undergraduate and Graduate 3 s.h.

Opportunity to investigate areas of special concern to students and their needs and potential in instruction.

THD-397 Computer in Instructional Design 3 s.h.

The nature and use of computers and their potential and limitations in instruction.

THD-398 Advanced Instructional Design and Technology 3 s.h.

Prerequisites: THD-103, THD-110.

A study of the advanced aspects of the design of instructional materials, student learning techniques that relate to the development, relation and documentation of a block of instructional material in student areas of interest and competency. Prerequisite: consent of instructor.
Postsecondary and Continuing Education

Overview

Programs

The programs in this section are designed to provide opportunities for individuals who have completed high school and are seeking further education or training.

Programs include:

- Associate degrees
- Bachelor's degrees
- Master's degrees
- Doctoral degrees
- Certificate programs
- Non-credit courses

Programs are available in a variety of formats, including online, traditional classroom settings, and hybrid options.

For more information, please visit the website or contact the admissions office.

Program Details

Please refer to the program descriptions for specific course requirements, prerequisites, and other important details.

Contact Information

For questions or more information, please contact:

[Program Chair/Department Chair]

[Phone Number]

[Email Address]

Program Website

[Program Website URL]
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 needed by instructors at the undergraduate level in two- and four-year colleges and by administrators in higher education not planning to continue for the doctorate. The Educational 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 areas 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 coursework in higher education and/or closely related areas as required (specific alternatives may be chosen in consultation with the Office of Community College Affairs).

7H271 Thw Community College 2-3 s.h.
7H230 Intern Seminar 3 s.h.
7H230 College Teaching Internship 3 s.h.
7A112 Teaching of Adults 3 s.h.

A master's degree in the study of a teaching college is a requirement for certification in Iowa and science areas.

Special Facilities

A resource and document collection relating to community colleges is available for students doing research or seeking employment information.

Courses

Adult Education

7A115 Introduction to Adult Education 2-3 s.h.
Philosophy and scope of adult education movement in United States.
7H112 Teaching of Adults 2-3 s.h.
Adult learning factors and consideration of recognized techniques in teaching techniques for adults.
7H231 Administration of Adult Education 3 s.h.
Methods of organizing and operating adult education services in public schools.
7H232 Problems and issues in Adult Education 2-3 s.h.
Performance, institutional role, interrelationships between youth and adult education, process, program and potential of youth.
7H252 Individual Initiation in Adult Education 2-3 s.h.
Prerequisite: consent of instructor.
7H257 Workshop: Adult Education 2-3 s.h.
7A231 Seminar: Adult Education 2-3 s.h.
Prerequisite: consent of instructor.
7A465 Ph.D. Thesis in Adult Education 3-6 s.h.

Higher Education

7H035 Individual Study: Higher Education 3-6 s.h.
Prerequisite: consent of instructor.
7H086 Problems and Policies for Higher Education 3 s.h.
Study analysis of current selected problems, policies and practices in American higher education. A basic course now to current and up-to-date.
7H131 Designing Learning Programs for Health Sciences Education 3 s.h.
Instruction in the design of educational activities and educational objectives, construction of small instructional units, evaluation of instructional materials, writing objective examination items, evaluation and evaluation.
7H132 Learning Strategies for Health Career Education 2 s.h.
Role of health specialist as teacher examined; variety of learning techniques adopted through instruction, observation and teaching, activities individualized to meet various learning styles.

7H175 Post High School Staff Development Workshop 0-2 s.h.

7H178 Community College Teaching Internship 2 s.h.
Preparation of college experience teaching of community college courses, selection of courses, assignment of responsibilities, selection of professional responsibilities.

7H230 Higher Education Colloquium 2 s.h.
Students and faculty invited to submit several topics and discuss implications of their implications.

7H211 Problems in College Teaching 2-3 s.h.
Principles of course planning, teaching procedures, examination, evaluation techniques and assessment of instructional procedures and outcomes.

7H222 History and Philosophy of American Higher Education 3 s.h.
Includes identification of major themes and developments in American higher education and study of the deans, presidents and movements which have particularly influenced these developments.

7H282 Educational Policies and Programs in America 2 s.h.

7H240 Transatlantic Analysis of American Higher Education 2-3 s.h.
Theories and concepts of organizational behavior related to the stmcture, organization and administration of American higher education. Prerequisite: consent of instructor.
78.538 College Teaching Internship 
Ann. Full-semester teaching experience modeling of expected three-year teaching load at a community college level or at an undergraduate level in a one-year instructor's certificate program. Prerequisites: 78.500, consent of instructor and approval by cooperating institution.

78.533 Problems in Higher Education 
Ann. Prerequisite: consent of instructor.

78.538 Seminar: History and Philosophy of American Higher Education 
Ann. Prerequisite: consent of instructor.

78.534 Seminar: Health Careers Education 
Ann. Prerequisite: consent of instructor.

78.530 Thesis in Higher Education 
Ann. Prerequisite: consent of instructor.

78.530 Educational Specialist Research in Higher Education 
Ann. Prerequisite: consent of instructor.

78.581 Ph.D. Thesis in Higher Education 1-2 credit units TEMPORARY. 
Current topics in major areas of professional and research interest. Honors for Ph.D. majors in higher education. May be repeated to a total of four hours. Prerequisites: consent of instructor.

78.583 Ph.D. Thesis in Higher Education 
Ann. Prerequisite: consent of instructor.

Secondary Education
Chair: John E. McElroy

78.220 Individual Instruction in Higher Education 
Ann. Prerequisite: consent of instructor.

78.220 Master's Research in Higher Education 
Ann. Prerequisite: consent of instructor.

78.320 Research in Higher Education 
Ann. Prerequisite: consent of instructor.

78.220 Seminar: The Professors 0-2 credit units TEMPORARY. 
Conceptualization of the role of the professor in the university. The role of theory and practice, class responsibilities, and student evaluation for a professorial position. Prerequisites: consent of instructor.

78.220 Seminar: Sociology in Higher Education 
Ann. Prerequisite: consent of instructor.

78.220 Sociology of Education 
Ann. Prerequisite: consent of instructor.

78.320 Theory and Practice of Planning in Higher Education 
Ann. Prerequisite: consent of instructor.

78.320 Administrative Decisions in Higher Education 
Ann. Prerequisite: consent of instructor.

The primary mission of the Division of Secondary Education is to strive for excellence in instruction in secondary schools. In fulfilling this mission, it is the responsibility of the faculty to conduct research in secondary education, teaching and practice. The mission of the Division is to provide a program of study that prepares students for teaching in secondary schools, including courses in the liberal arts and sciences, and the preparation of students for the professional teaching certificate.
includes a practicum experience for a semester during the senior year.
Students preparing to teach art, music or physical education typically take methods courses and acquire student-teaching experience at both the secondary and elementary levels.

During the freshman and sophomore years, the student completes most of the general requirements for the bachelor's degree by acquiring proficiency in matric, mathe-

matics, physical education and a foreign language, and by satisfying core require-
ments 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 founda-
tions courses listed below in their sophomore or junior year. Graduate students may, with the approval of their advisers, elect equivalent graduate courses which satisfy the foundation requirement.

75:91 Pre-education Practicum 2 s.h.
75:100 introduction to Secondary School Teaching 2 s.h.
79:75 Educational Psychology and Measurement 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 should make application for student teaching by March 15 preceding their senior year. The student teaching period is for the full semester for 12 semester hours of credit.

Students with certain teaching majors may be required to register in one of the optional courses listed below concurrently with 75:191-192 Observation and Laboratory Practice in the Secondary School. Faculty advisers should be consulted about the requirement before registration.

75:190 Individual Projects in Laboratory Practice 1-3 s.h.
75:107 Seminar Curriculum and Student Teaching 1-3 s.h.
79:103 Selection and Use of Media for Instruction 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. The completion of an academic major as defined by the major department will satisfy this requirement in most cases.

It is suggested that students elect sufficient work in a field outside the area of the major to be recommended or certified by the University, or teaching in a second field (20-24 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 advisers 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 cur-
riculum, art education, business education, English education, mathematics education, music education, physical education, sci-
ence education, 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 completed work for teaching certification at the undergraduate level.

Other graduate programs leading to the M.A., M.S. and Ed.S. degrees, which usually combine advanced work in the academic disciplines and professional education, are designed to enhance the preparation of classroom teachers, department heads, super-
visors, 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 instructors in their respective fields of specialization in colleges of education or in the academic department of their major field, in addition to the types of positions previously mentioned. Some of the interdisciplinary programs are administered jointly by the College of Education and other academic departments of the University.

Programs leading to the M.A., Ed.S. and Ph.D. degrees are also provided for the preparation of administrative and supervi-
sory personnel who may assume positions of leadership in the field of secondary 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 this generalization do frequently occur, however: applicants for admission to most of the degree programs in this Division require a year or more of successful teaching experience, and in the cases noted in the following matrix, 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:

Secondary School Curriculum—M.A., Ph.D.
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., Ph.D.
Physical Education—M.A., Ph.D.
Science Education—M.A., M.A.T., M.S., Ph.D.
Social Studies Education—M.A., Ph.D.
Speech Education—M.A.

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 bulletin entitled Advanced Studies in Education.

Financial Aids

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. Unless special permission is granted, holders must register for at least nine hours per semester. The assignments of assistants vary. Some involve the participants in teaching selected undergraduate courses or in the supervision of practicum experiences. Other assignments are primarily in research.
Social Foundations of Education

Coordinator: Robert Brim-Clay

Social foundations is a broad system of education that includes a range of experiences and activities that are designed to prepare individuals for life in society. This system includes education, socialization, and the social contexts in which people learn and develop. 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 desirable 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 available are listed below. Areas of study within this field include: educational sociology; socialization, history of education, comparative and international education, and sociology of education.

Admission Requirements

General requirements are those of the Graduate College for admission to a doctoral program. A personal interview with one or more members of the Social Foundation's faculty is desirable, and may be required. A social sciences, philosophy, or general humanities undergraduate and/or graduate emphasis and two years of teaching experience or the equivalent in related work are strongly recommended. To remain in the program, the student must maintain a 3.0 overall grade-point average.

Courses

Social Foundations and Comparative Education

197.107 History of American Education 2-3.0 hours
Our educational training and culture of past 150 years as they have contributed to today's schools in the United States.

197.108 Comparative Studies 2-3.0 hours
Treatment of contemporary educational changes in the European scene, similarities and contrasts between American and European, Spanish, French, English, France, and Germany, especially as they bear on our society.

197.109 Education in Latin America 2-3.0 hours
Problems and issues of education in selected areas and countries of Latin America, Asia, and Southern Africa.

197.110 The Evolution of Women's Role in Education 2-3.0 hours
Although principal focus is on the emergence of women in America's educational history, a focus is provided through treatment of women's role in society. Europe's history also as in other areas today.

197.111 Philosophy of Education 2-3.0 hours
In-depth study of the philosophical presuppositions and philosophical theses that have influenced modern education; stress placed on the philosophy of education and critical issues which are important to society today and education in today's society.

197.112 Educational Reform: School Reform of the 1920s 1-2.0 hours
Same as 761.18.

197.113 Educational Sociology 3-4.0 hours
Examination of the role of education in social systems, impact of formal education on socialization, social mobility and economic achievement in the U.S. and selected countries. Same as 415.105.
77-120 John Dewey and Education 3-2-1-1 philosophical "Teacher as philosopher" and "Instrumentalism," with particular emphasis on his "Toward a Science of Learning," educational data, and school as a living entity and as an open system.

77-121 Course in Sociology 3-2-4-1 Historical perspective to educational methodology and research design. Emphasis on sociological, historical, and philosophical approaches to education. Focus on social change and its impact on education.

77-122 Teaching Practice 3-2-3-1 Focus on the art of teaching, including classroom management, assessment, and lesson planning. Emphasis on developing a reflective practice.

77-123 Psychology of Education 3-2-4-1 Introduction to the psychological principles that underlie learning, motivation, and cognitive processes. Focus on educational applications.

77-124 Theory of Education 3-2-3-1 Introduction to the theoretical foundations of education, including historical, philosophical, and sociocultural perspectives.

77-125 Educational Psychology 3-2-3-1 Focus on the application of psychological principles to educational settings, including learning theories, motivation, and assessment.

77-126 Foundations of Education 3-2-3-1 Development of educational thought and the historical context of educational theories and practices.

77-127 Theory of Education 3-2-4-1 Introduction to the philosophical and methodological foundations of educational research.

77-128 Educational Administration 3-2-3-1 Focus on the organizational and administrative aspects of education, including leadership, policy-making, and program development.

77-129 School Finance 3-2-3-1 Introduction to the principles of educational finance, including funding mechanisms, budgeting, and financial management.

78-100 General Education 6-2-1-6 Focus on developing a broad understanding of the human condition, including themes such as diversity, ethics, and social responsibility.

78-101 Advanced Mathematics 3-2-3-1 Advanced topics in mathematics, including calculus, linear algebra, and differential equations.

78-102 Advanced Statistics 3-2-3-1 Advanced statistical methods and their applications in education.

78-103 Advanced Economics 3-2-3-1 Advanced topics in economics, including macroeconomics, microeconomics, and econometrics.

78-104 Advanced Psychology 3-2-3-1 Advanced psychological theories and their applications in educational settings.

78-105 Advanced Sociology 3-2-3-1 Advanced topics in sociology, including social theory, social stratification, and social change.

78-106 Advanced Educational Psychology 3-2-3-1 Advanced topics in educational psychology, including learning theory, motivation, and assessment.

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79-100 Advanced General Education 6-2-1-6 Continuation of the general education course, with a focus on interdisciplinary and global perspectives.

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79-102 Advanced Statistics 3-2-3-1 Advanced statistical methods and their applications in education.

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81-108 Advanced School Finance 3-2-3-1 Advanced topics in educational finance, including funding mechanisms, budgeting, and financial management.

81-109 Advanced General Education 6-2-1-6 Continuation of the general education course, with a focus on interdisciplinary and global perspectives.

Program Requirements

Special Core Requirement: Natural Science

Students majoring in Early Childhood, Elementary, or Special Education should complete the special Science-Mathematics Foundation designated for them. Completion of this core requirement is a prerequisite to enrolling in 73-185 Methods: Elementary
School Science and 7E-183 Methods: Elementary School Mathematics. This prerequisite may be satisfied in one of three ways:
Satisfactory completion of 97:55-55 and 28M:80;
Satisfactory completion of equivalent courses at another four-year accredited college or university; or
Prior completion of 8 s.h. of other science and/or mathematics courses which satisfy the College of Liberal Arts core requirement, and passage of special tests dealing with the content of 97:55-55 and 28M:80.

Students not passing the science examination must successfully complete 97:104; students not passing the mathematics examination must successfully complete 28M:80.

**Elementary Mental Retardation Program**

<table>
<thead>
<tr>
<th>Course</th>
<th>S.H.</th>
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<tbody>
<tr>
<td>7U:130 Exceptional Children</td>
<td>3</td>
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<tr>
<td>7U:135 Mental Retardation</td>
<td>3</td>
</tr>
<tr>
<td>7U:30 Introduction to Services for Handicapped</td>
<td>1</td>
</tr>
<tr>
<td>7U:32 Instructional Methods and Procedures in Special Education I</td>
<td>3</td>
</tr>
<tr>
<td>7U:33 Instructional Methods and Procedures in Special Education II</td>
<td>3</td>
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<tr>
<td>7U:35 Methods Practicum in Special Education</td>
<td>3</td>
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<tr>
<td>7U:188 The Trinimally and Substantially Mentally Retarded Child</td>
<td>2-3</td>
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<tr>
<td>7U:192 Laboratory Practice in Education of the Mentally Retarded Child</td>
<td>7</td>
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**Elementary Physical Disabilities Program**

<table>
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<td>7U:130 Exceptional Children</td>
<td>3</td>
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<tr>
<td>7U:139 Orientation to Rehabilitation of Physically Handicapped Child</td>
<td>3</td>
</tr>
<tr>
<td>7U:30 Introduction to Services for Handicapped</td>
<td>1</td>
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<tr>
<td>3:12:15 Introduction to Speech and Hearing Processes and Disorders</td>
<td>3</td>
</tr>
<tr>
<td>7U:32 Instructional Methods and Procedures in Special Education I</td>
<td>3</td>
</tr>
<tr>
<td>7U:188 Mental Retardment Physically Handicapped</td>
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**TU35 Methods Practicum in Special Education**

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>7U:191 Laboratory Practice in Education of the Physically Handicapped Child</td>
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**Secondary Mental Retardation Program**

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<td>7U:130 Exceptional Children</td>
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<tr>
<td>7U:135 Mental Retardation</td>
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</tr>
<tr>
<td>7U:30 Introduction to Services for the Handicapped</td>
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</tr>
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<td>7U:32 Instructional Methods and Procedures in Special Education I</td>
<td>3</td>
</tr>
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<tr>
<td>7U:33 Instructional Methods and Procedures in Special Education II</td>
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**Two semesters of:**

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<th>S.H.</th>
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<tr>
<td>7U:35 Methods Practicum in Special Education</td>
<td>2</td>
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**Other required coursework:**

<table>
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<tr>
<th>Course</th>
<th>S.H.</th>
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<tbody>
<tr>
<td>7P:75 Educational Psychology and Measurement</td>
<td>3</td>
</tr>
<tr>
<td>7S:100 Introduction to Secondary School Teaching</td>
<td>2</td>
</tr>
<tr>
<td>7P:170 Introduction to Psychology of Reading</td>
<td>2</td>
</tr>
<tr>
<td>7W:99 Audiovisual Equipment for Instruction</td>
<td>1</td>
</tr>
<tr>
<td>7W:103 Selection and Use of Media for Instruction in Sociology:</td>
<td>2</td>
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<tr>
<td>Principles</td>
<td>4</td>
</tr>
<tr>
<td>34:140 Criminology or 34:141 Juvenile Delinquency</td>
<td>3</td>
</tr>
<tr>
<td>7U:182 Laboratory Practice in Education of the Mentally Retarded Child</td>
<td>15</td>
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**Graduate Programs**

Graduate programs are offered in elementary and secondary learning and emotional disabilities, school psychology, work-study coordination, administration of special education and teacher education.

**General Admission Requirements**

All applicants are reviewed by an admissions committee of the Division of Special Education.

The following are required for admission to any of the graduate programs in the Division of Special Education:

- A minimum grade-point average of 2.50 for admission to master's and Education Specialist degree program, 2.70 for doctorate programs.
- Completion of the Graduate Record Examination (GRE) before being admitted to the program (combined scores of 1000 or above are preferred).
- Ability to work with children and youth (see specific requirements in each program area); and
- Letters of recommendation documenting the ability to work with children and youth (see specific requirements in each program area); successful interpersonal relationships in employment situations; and potential for success as a graduate student.

School psychology students should note that March 1 is the deadline for the receipt of all application materials (application form, official transcripts, official GRE scores, letters of recommendation, and statement of purpose for entering program). No more than 10 students are accepted in the school psychology program each year.

**M.A. Program (nonthesis)**

Minimum total semester hours required: 36

Purpose: To prepare teachers to implement a wide range of educational plans to assist the exceptional child in school, to function as resource teachers, line teachers and teachers in self-contained classrooms.

Successful completion of this program qualifies the person for recommendation for certification in teaching the emotionally disabled or the learning disabled.

Admission requirements: See general admission requirements above. Students must be eligible for certification in elementary education (Iowa Endorsement 10) or secondary education (Iowa Endorsement 20) prior to being admitted to the program. It is preferred that candidates have one or more years of teaching experience. A list of required courses is available from the Division of Special Education office.

**Ed.S. Program with Emphasis in Special Education**

Minimum total semester hours required: 80
Ed.D. 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 (Iowa Endorsement 48); students are encouraged to complete sufficient coursework in general school administration to qualify for the superintendent's credential.

Admission requirements: See general admission requirements above. Additional requirements include a master's degree in special education and at least one of the areas of special education; and teaching or related relevant experience with exceptional children. A minimum GRE (Aptitude Test) score in excess of 1000 is preferred.

Ed.D. 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 40) 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 evaluation. A 3.0 grade-point average on previous degree coursework is preferred.

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 and physically disabled) and the University Psychiatric 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.D. and Ph.D. programs. The Javel Zobor Memorial Tuition Stipend is available to an upper-division or under-graduate student in the training program for teachers of the physically handicapped.

Courses

7020 Introduction to Services for Handicapped

7030 Instructional Methods and Procedures

7031 Instructional Methods and Procedures

7050 Methods of Teaching Physically Handicapped

7060 Methods of Teaching Visually Handicapped
72:126 Orientation to Rehabilitation of the Physically Handicapped Child 3 s.h.

Handicapped children have diverse needs and present various problems to the teacher. This course will acquaint the student with the nature of handicapping conditions, the classes of handicapped children, and methods of teaching these children. Fall, summer.

72:140 Laboratory Practice in Education of the Physically Handicapped Child 1 s.h.

Student teaching with profoundly handicapped. Prerequisite: consent of instructor.

72:152 Laboratory Practice in Education of the Mentally Retarded Child 1 s.h.

Student teaching with the mentally retarded. Prerequisite: consent of instructor.

72:154, 155 Jr.-Sr. Project in Education of the Physically Handicapped Child 2 s.h.

Student teaching with physically handicapped. Prerequisite: consent of instructor.

72:158 Individual Instruction in Special Education Undergraduate 1 s.h.

Prerequisite: consent of instructor.

72:200 Educational Programming for Exceptional Persons 3 s.h.

A general approach course; topics include P.L. 94-142, development of IEPs, assessment strategies, behavioral objectives, tests and data analysis, and program evaluation. Fall, summer. Prerequisite: special education major. Corequisite: 72:131 or 72:132.

72:281 Methods of Teaching Elementary Age Learning Disabled 3 s.h.

Diagnostic and multiple methods for appropriate use with children with various types and degrees of learning disabilities. Spring. Prerequisite: 72:993.

72:282 Methods of Teaching Elementary Age Emotionally Disabled 3 s.h.

Evaluation of methods and materials appropriate for use with children with various types and degrees of learning disabilities. Spring. Prerequisite: 72:993.

72:283 Methods of Teaching Secondary Age Learning Disabled 3 s.h.

Spring. Prerequisite: 72:200.

72:284 Methods of Teaching Secondary Age Emotionally Disabled 3 s.h.

Spring. Prerequisite: 72:993.

72:285 Group Inservice Intervention Strategies with Emotionally Disabled 1 s.h.

Uses of group and small group instruction and observation techniques with the emotionally disabled and their families. Fall, Spring. Prerequisites: 72:126 and consent of instructor.

72:292 Practicum with Exceptional Persons 1-5 s.h.

A practicum experience which provides practicum under the supervision of a specially trained teacher. This practicum is designed for students who may be teaching in special education areas. Prerequisites: special education major and consent of instructor.

72:293 Practicum with Learning Disabled 1 s.h.

A practicum experience which provides practicum under the supervision of a specially trained teacher. This practicum is designed for students who may be teaching in special education areas. Prerequisites: special education major and consent of instructor.

72:295 Seminar: Problem Learning Disabilities/Emotionally Disabled 1 s.h.

A seminar for students interested in teaching problems of learning disabilities or emotionally disabled students. Fall, Spring. Prerequisite: special education major and consent of instructor.

72:296 Job Oriented for Exceptional Persons 3 s.h.

Evaluating curriculum, programs, and delivery systems which help handicapped individuals become employable. Development of curriculum, techniques of job and task analysis, agencies which are designed to assist the handicapped worker. Field trips to work stations and job training sites are required. Spring, summer.

72:298 Advanced Problems in Psychology of Exceptional Children 3 s.h.

Current psychological techniques in interviewing and evaluating emotionally disturbed children.

72:300 Administration and Supervision of Special Education 3 s.h.

For students interested in supervision and administration for special education personnel. Fall.

72:323 Psychometrics in School Psychological Services 3 s.h.

Supervised practicum in psychodiagnostical and educational evaluation in school settings. May be repeated. Prerequisites: 72:258, 72:245, 72:252 and consent of instructor.

72:325 Assessment and Remedial Services of Learning Disabilities 3 s.h.

Assessment of individual educational needs for learning disabled children and for emotionally disturbed children. Fall, Spring. Prerequisite: 72:245.

72:328 Seminar/Personal Assessment of the School Age Child 3 s.h.

Understanding of the variables that influence a child's behavior. Special emphasis on the role of behavior rating scales, diagnostic and perspective personality tests. Fall. Prerequisite: consent of instructor.

72:336 Individual Intelligence Testing 3 s.h.

Administration of individual intelligence tests; interpretation of test results; test-taking and test anxiety; factors which influence performance. Fall. Prerequisite: Psychology 114, 115 or consent of instructor.

72:352 Integration of Assessment Information 1 s.h.

Supervised practicum in the integration of educational, psychological, social, and medical information into written reports. Prerequisite: successful completion of courses in assessment; 72:258, 72:245, 72:252, 72:273 and consent of instructor.

72:370 Seminar: Special Education of Exceptional Children 3 s.h.

Observation, participation, and individual instruction pertaining to procedures of teaching, guidance and administrative evaluation, construction, and application of curriculum materials for exceptional children. Prerequisite: consent of instructor.

72:371 Seminar in Special Education 1-3 s.h.

Prerequisite: consent of instructor.

72:379 Seminar: Advanced Practicum for Exceptional Education Pre-service Teachers of Exceptional Children 2 s.h.

Perspective on problems in teaching with program design, program goals, methods, experiences in special education; emphasizes problem solving; certification; application of curriculum interventions. Prerequisite: consent of instructor.
Engineering is the profession in which a knowledge of the mathematical and natural sciences is applied to develop ways to economically utilize the materials and forces of nature for the benefit of mankind. The major aim in engineering is the creation of a new process, product, material or system that is useful to our society. This activity demands a high degree of creativity coupled with broad knowledge, good judgment and a practical sense of economics.

The College of Engineering prepares young men and women for one or more of the many career opportunities in the engineering profession. Such opportunities include positions in design, production, development, research, management and consulting. Engineers are employed in industrial organizations, governmental agencies and in private practice.

The College of Engineering has two major responsibilities. The first is the responsibility for the undergraduate engineering curricula, laboratories, counseling and other aspects of the undergraduate engineering programs. The second responsibility is the graduate programs leading to the M.S. and Ph.D. degrees in modern areas of engineering. Education at the graduate level includes extensive activities in creative research and design in laboratories of the College by faculty members and graduate students.

Programs Offered

The College of Engineering offers curricular programs leading to the Bachelor of Science, Master of Science and Doctor of Philosophy degree in the professional fields of chemical engineering, civil engineering, electrical engineering, industrial and management engineering, and mechanical engineering.

The College also offers an undergraduate program leading to the Bachelor of Science degree in engineering for those students whose career objectives cannot be met by the professional programs; typical of such opportunities is the biomedical engineering program.

Any of the undergraduate programs offered by the College of Engineering may be combined, in a five-year option, with a program leading to the Bachelor of Arts degree in the College of Liberal Arts.

The undergraduate programs in Chemical, Civil, Electrical, Industrial, and Mechanical Engineering are accredited by the Engineers Council for Professional Development.

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 an institute.

The academic programs are identified as Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, Engineering, Industrial Engineering, and Mechanical Engineering. 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 chair.

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 the most functional areas of modern engineering endeavors. 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 chair.

This grouping of resources according to broad functional areas combined with strong formal curricular programs provides clear insight for the student of the interdisciplinary nature of modern engineering while he is engaged in formal academic studies. Additionally, the flexible arrangement broadens the educational base 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, wave hydrodynamics, river mechanics, ice hydraulics, hydrology, water resources, hydraulic structures, fluid mechanics, and advanced instrumentation and data handling techniques for fluids research.

Direct student participation in all research and consulting activities is one of the hallmark of the Institute's operation.

**College Facilities**

**The Engineering Library**

The Engineering Library is a center of College activity, its collection includes 45,000 books and 750 periodicals. It is equipped with microfilm and microfiche readers.

**Computer Services**

Services of the University Computer Center are used extensively by students and faculty of the College, under the auspices of the College computer committee. The College itself maintains remote terminal 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 interaction with the University's IBM 360-65 and HP-2000 computer systems via a display terminal and hard copy terminals. The laboratory also contains other commonly used computer accessory equipment such as key punches and line printers, as well as video terminals for educational purposes.

**Placement Services**

Students and alumni can avail themselves of the placement services provided by the College of Engineering. Interview rooms and a placement library of informational material are located in the Engineering Building. Assistance is available for arranging interviews and obtaining information on job opportunities.

**Undergraduate Programs**

**Degree Requirements**

The Bachelor of Science degree in engineering requires a minimum of 138 semester hours of credit including satisfaction of the specific requirements of the major program as described in following 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 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 fundamental 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 years extending through the entire four years of undergraduate study. The items are mathematics, basic and applied sciences, socio-humanistic studies, and analysis and design. The mathematics basic and applied sciences, and socio-humanistic studies courses develop the background required for engineering. The practice of engineering involves the utilization of this education to design practical solutions to real problems. This ability is developed in the analysis and design. The course sequence begins with an introduction to Engineering in the first semester of the freshman year and terminates with senior-level design courses during the final year.

The program curricula are based upon 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 engineering 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 expects 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 philosophy 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 adjustments in schedule. This gives ample time before declaring a major to become familiar enough with the various programs to choose the major which best fits his or her interests.

The curriculum for the freshman year is:

**First Semester**
4:13 Principles of Chemistry I 3 s.h.
10:1 Rhetoric 4 s.h.
10:3 Rhetoric 4 s.h.
22M:35 Engineering Calculus I 4 s.h.
58C:1 Introduction to Engineering 2 s.h.
58C:3 Engineering Graphics 2 s.h.
Total 15 s.h.

**Second Semester**
4:16 Elementary Chemistry Laboratory I 2 s.h.
102 Rhetoric 4 s.h.
of free elective 3 s.h.
2204 Electrical Engineering Calculus II 4 s.h.
5804 Engineering Computations 3 s.h.
5807 Statics 2 s.h.
Total 14 s.h.

A maximum of 7 s.h. is allocated to satisfaction of the rhetoric requirement. Students who qualify for 103 will be allowed 3 s.h. of free elective, while those taking the 11s.h. sequence of 10-1-2 may apply only 7 s.h. toward their engineering program.

The courses listed above are required of all students in engineering. 4-14 Principles of Chemistry II is recommended during the second semester for students who have chosen biomedical or chemical and materials engineering majors.

**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, the student is to select, with the advisor’s approval, a minimum of 16 semester hours of socio-humanistic electives, to provide at least six hours of coursework in the social sciences and art in humanistic disciplines.

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 the 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; East Asian Languages and Literature; English; History; Literature, Science, and the Arts; Music; Philosophy; Religion; Linguistics; Sociol... 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 of credit earned and applicable to a baccalaureate degree in engineering, according to the following table:

- Freshmen—less than 28 semester hours
- Sophomores—28 to 55 semester hours
- Juniors—56 to 89 semester hours
- Seniors—90 or more semester hours

**Academic Probation and Good Standing**

A student enrolled in the College of Engineering who fails to attain the following minimum semester and cumulative grade-point average 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 averages equal or exceed those appropriate to 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 reenter without specific approval following two consecutive semesters on probation. A student who has not met satisfactory improvement may be dismissed from the College. A student dismissed from the College for poor scholarship may petition the associate dean for undergraduate programs for permission to reenroll after an interval of two regular semesters.

**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 first 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 of 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 chair.

**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**

A maximum of two courses taken on a pass-fail basis may be applied toward satisfaction of the socio-humanistic requirements. The P-F option may not be used for courses taken to satisfy the rhetoric 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 languages, Iowa offers a combined program leading to the Bachelor of Arts degree in the College of Liberal Arts and the Bachelor of Science degree in the College of Engineering. By proper scheduling of coursework in consultation with advisors from the Colleges of Liberal Arts and Engineering, the 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 insight gained by involvement in the practical application of subject matter studied in the classroom usually results in improved performance 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 nontechnical considerations involved in any engineering project.

The co-op phase ordinarily begins during or immediately 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 Tests 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 a 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 on 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 preengineering 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-organized reception for new students. Other College-wide matters of general student interest are also handled through the A.S. of E.

Engineering students publish their own student journal, the Newtive Engineer. All positions are filled 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 additional financial 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
engrering 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 course prefix and a three-digit suffix separated by a colon. 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:

52 Energy Engineering
54 Information Engineering
56 Materials Engineering
54 Systems Engineering

The second 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:

0 Undergraduate Engineering Civil Programs
1 Biomedical Engineering
2 Chemical Engineering
3 Civil Engineering
4 Electrical Engineering
5 Industrial and Management Engineering
7 Courses common to more than one program
8 Mechanical Engineering

The third digit of a course suffix identifies the level and type of course. Generally, the suffix numbers below 100 indicate courses primarily for undergraduates, numbers 100 to 299 signify courses for undergraduates and graduates, and numbers 300 and above designate courses specifically for graduates. The table below provides further detail of conveying information on the level and type of course:

090-099 Required core program courses
100-019 Biomedical core program courses
200-299 Junior core program courses
300-499 Required courses in undergraduate programs
501-594 Undergraduate professional program seminars

095-097 Contemporary topics courses for undergraduates
098 Individual investigation courses for undergraduates
101-109 Courses for which little or no engineering, science or mathematics background is required
110-119 Elective courses for non-engineering majors
191-194 Seminars for undergraduates and graduates
195-197 Contemporary topics courses for undergraduates and graduates
198 Individual investigations for graduates
199 M.S. thesis research
210-289 Upper-division graduate courses
291-294 Seminars for graduates
295-297 Contemporary topics courses for graduates
299 Ph.D. thesis research

The courses offered by each division are listed within each division's section by disciplinary area starting with the lowest level course and proceeding to the highest level course.

Biomedical Engineering

Program chair: Xuan Yin
Faculty: professors: Robert C. Metcalf (Chair), Chin-Jan Chiu, Ying D. Lee, Alain H. Magnin, Yvonne D. McDonald, Kevin R. Newell, professor: John L. Robert, associate professors: Joseph H. Seung, Theodore F. Smith, education professors: Richard A. Brand, Takanori Yama

Assistant professors: Steve M. Collins, Roy D. Connell, Yvonne Yuen

Degree offered: M.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 basics of biology and medicine. Recognition of this need has led to the emergence of a new interdisciplinary engineering program designed to bridge the gap between the life sciences and engineering. The biomedical engineering program is a curricular 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 and builds on the need and opportunity associated with careers in the biomedical engineering profession. Students who complete this program may pursue career opportunities in industry, government, research institutions, and medical professions. The program has been carefully designed so that it is possible to satisfy the entrance requirement of the

Graduate College and the colleges of Medicine, Dentistry, and...

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. Both undergraduate and graduate engineering students participate actively with college faculty members and their colleagues in the life and health sciences on projects of mutual interest.

Curriculum

Senior Year

First Semester

232.37 Engineering Calculus II
530.16 Thermodynamics I
540.11 Dynamic Systems Analysis I
560.10 Materials Science I
881.10 Dynamics

Total

17 s.h.

Second Semester

232.38 Differential Equations and Linear Algebra
573.1 Principles of Animal Biology
540.22 Dynamic Systems Analysis II
520.20 Mechanics of Fluids and Transfer Processes

Total

16 s.h.

Junior Year

First Semester

600.39 Probability and Statistics for Engineering and Physical Sciences
582.21 Principles of Design I
540.29 Electromagnetic Theory

4 s.h.
521.81 Elementary Bioengineering 4 s.h.
Socio-Humanistic elective 3 s.h.
561.91 Professional Seminar 0 s.h.
Total 17 s.h.

Second Semester
29:92 Physics I 3 s.h.
4:121 Organic Chemistry I 3 s.h.
560:22 Principles of Design II 3 s.h.
Technical electives 3 s.h.
Socio-Humanistic electives 4 s.h.
561:91 Professional Seminar 0 s.h.
Total 16 s.h.

Senior Year
First Semester
561:83 Biomedical Engineering 3 s.h.
Technical electives 6 s.h.
Socio-Humanistic electives 6 s.h.
561:91 Professional Seminar 0 s.h.
Total 15 s.h.

Second Semester
561:94 Biomedical Engineering Design II 3 s.h.
Technical electives 3 s.h.
Socio-Humanistic electives 3 s.h.
561.91 Professional Seminar 0 s.h.
Total 15 s.h.

Undergraduate Program
The Bachelor of Science degree program in chemical engineering prepares the student for work in design, supervision, development, or sales. The curriculum includes extensive training in chemistry, in addition to the basic engineering courses. Undergraduate students have the opportunity to work with faculty members and graduate students on significant problems.

Curriculum
Sophomore Year
First Semester
22M:37 Engineering Calculus III 4 s.h.
560:10 Dynamics 3 s.h.
54:111 Dynamic Systems Analysis I 3 s.h.
580:4+ Materials Science I 3 s.h.
Socio-Humanistic elective 3 s.h.
Total 16 s.h.

Second Semester
22M:38 Differential Equations and Linear Algebra 4 s.h.
54:25 Electromagnetic Theory 4 s.h.
54:10 Dynamic Systems Analysis II 3 s.h.
560:42 Process Calculations 3 s.h.
52:20 Mechanics of Fluids and Transfer Processes 4 s.h.
Total 15 s.h.

Junior Year
First Semester
4:131 Physical Chemistry I 3 s.h.
22:82 Physics I 3 s.h.
562:43 Design for Energy and Momentum Transfer 4 s.h.
580:21 Principles of Design I 3 s.h.
Technical elective 3 s.h.
582:91 Professional Seminar 0 s.h.
Total 16 s.h.

Second Semester
4:132 Physical Chemistry II 3 s.h.
4:140 Advanced Chemistry Laboratory I 3 s.h.
562:41 Chemical Engineering Thermodynamics 3 s.h.
562:44 Mass Transfer Operations 3 s.h.
Socio-Humanistic elective 3 s.h.
562:91 Professional Seminar 0 s.h.
Total 15 s.h.

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 the opportunity for graduates are in industrial and 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, immiscible thermodynamics, fluid flow, transonic phenomena, constitutive equations, particle characterization and use, and biomedical engineering. More recently the faculty have embarked on research in such interdisciplinary areas as chemical technology and automation and aging effects in materials.
Civil and Environmental Engineering

Program chair: Hartnett Kane
Faculty professors: De G. Swanson, Richard R. Deleg, Harson Kane, Jan F. Knappe, Robert D. McCullough, Daniel B. McFarland, Joseph L. Ricketts, William M. Sapp; associate professors: Cyril M. Menu, Kenneth D. Dwiker, Keith A. Lang
Student representative: Helen D. Wullfine
Advisors: Jean B. Voss, Thomas B. Criley, Ronald L. Sattler, John L. Bioeble, Joseph J. Ehrlich, Jennifer W. Strother, James D. Vrankovic

Civil engineering is the oldest and one of the three largest fields of engineering. It traditionally has been concerned with facilities which are both large-scale and essential to modern life. Civil engineering projects include transportation systems and their components, such as bridges, highways, public transit systems, railways, harbors, airports, deserts and even space environments. Large water, waste and office buildings to provide enclosed working and living spaces; 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 and other projects accounts for the steady demand for civil engineers through both good and bad economic times, and the variety of tasks that the individual civil-engineer is qualified to perform ensures flexibility and the capacity to adjust to shifting demands.

In planning and carrying out a program of courses, 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 first 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 needed educational background essential to modern civil engineering practice. Electives in the senior year permit greater breadth or additional concentration in such areas of specialization as structural and foundation engineering, environmental engineering, hydraulic engineering, transportation engineering.

Curriculum

Sophomore Year

First Semester
22M:37 Engineering Calculus III
520:19 Thermodynamics
540:11 Dynamic Systems Analysis
560:10 Dynamics
560:15 Materials Science I
Total 17 a.h.

Second Semester
22M:38 Differential Equations & Linear Algebra
520:20 Mechanics of Fluids and Transfer Processes
540:12 Dynamic Systems Analysis
550:18 Mechanics of Deformable Solids
Seminar: Environmental, hydrostic elective
Total 17 a.h.

Junior Year

First Semester
580:39 Probability and Statistics for Engineering and Physical Sciences
580:35 Electromagnetic Theory
580:21 Professional Seminar
580:22 Principles of Design I
*Required sequences
Total 15-17 a.h.

Second Semester
289:92 Physics I
583:91 Professional Seminar
580:32 Principles of Design II
*Required sequences
Socio-humanistic elective
Total 16 a.h.

Senior Year

First Semester*
583:96 Soil Mechanics
583:91 Professional Seminar
*Design elective and/or technical elective
Total 15-16 a.h.

Second Semester
583:91 Professional Seminar
*Design elective and/or technical elective
Total 17 a.h.

*One design elective is required in the senior year. Sequences are:
580:31 Structural Analysis I
580:35 Structural Design I
580:73 Transportation Engineering I
580:74 Transportation Engineering II
580:150 Principles of Environmental Engineering
580:66 Flow Systems in Environmental Engineering

*One design elective is required in the senior year and includes:
First semester
583:151 Hydraulic Systems Design
583:135 Structural Design II

583:36 Soil Mechanics
583:91 Professional Seminar
*Design elective and/or technical elective
Total 15-16 a.h.

Senior Year

First Semester*
583:96 Soil Mechanics
583:91 Professional Seminar
*Design elective and/or technical elective
Total 15-16 a.h.
Graduate Programs

The graduate program in civil and environmental engineering offers curricula preparing students for professional careers and further study in environmental engineering, hydraulic engineering, structural and geotechnical engineering, transportation engineering and water resources.

The hydraulics and water resources curricula are associated with the Iowa Institute of Hydraulic Research, whose laboratory is world-renowned. The senior staff members of the Institute are professors in the program and devote about half-time to teaching. The Institute offers unique opportunities for students to participate actively in the research, analysis and design aspects of real world problems. Considerable attention is given to the use of digital computers in mathematical modeling and in the acquisition and processing of data. The water resources curriculum also has ties to the Institute of Economic Research, the Institute of Urban and Regional Research, and the colleges of Business, Law, and Liberal Arts. Courses in hydraulics and water resources are described in this catalog, within the section devoted to the Division of Energy Engineering.

The environmental engineering curriculum has two basic aims, one engineering and the other applied science. This curriculum maintains a heavy emphasis on interdisciplinary research and academic activities with other programs and colleges on campus, including the 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 in the general program of study or specialization in one of three areas: water quality management, air quality management or solid waste management. Environmental engineering and science courses are described in the Division of Engineering section of this Catalog.

The structural and geotechnical curriculum may be directed towards design, analysis, research or a combination of these. Special strengths exist in the areas of time dependent behavior of reinforced and prestressed concrete structures, optimal design of structural systems and soil behavior. Coursework and research in structural analysis, structural design, soil mechanics and foundation and optimal design are available. Courses in these areas are described in the section of this catalog devoted to the Division of Materials Engineering.

Transportation engineering includes work in planning, design, construction and operation of transportation systems and facilities. A cooperative relationship exists with the graduate program in urban transportation offered by the Center for Urban Transportation (see "Urban Transportation"). Transportation courses are described in the Division of Systems Engineering section of this Catalog.

Laboratory and other facilities available in the civil and environmental engineering program are described in the Division of Energy Engineering and Division of Materials Engineering sections of this Catalog.

Master of Science

The Master of Science programs in civil and environmental engineering are designed to permit further concentration in the area or areas of the student's choice. Graduates are placed in advanced technical positions in industry, consulting firms, or in government, or they may continue to pursue graduate study if qualified. Current and projected demand for M.S. graduates is excellent.

In general, the plan of study, with or without thesis, must include a minimum of 30 semester hours credit, with not more than six semester hours of credit allowed for thesis. An additional six semester hours are required in the foundations environmental engineering curriculum.

Each student, with the approval of his or her adviser, develops a plan of study which satisfies special requirements of the curriculum chosen by the student.

All candidates for the degree are expected to have a minimum grade-point average near 3.0 and required to pass written and oral examinations.

Doctor of Philosophy

The doctoral degree is granted primarily on the basis of achievement, rather than on a prescribed course of study. Requirements as to semester hours of coursework vary somewhat among the various areas of specialty. The candidate will normally need at least three years of full-time work beyond the baccalaureate degree, one year of which is devoted to the preparation of dissertation research which contributes to knowledge in the field. In some specialty areas, a qualifying examination is required during the second semester for students who have not earned an M.S. in one of the University of Iowa graduate programs in engineering.

All doctoral students are required to pass a written and oral comprehensive examination prior to formal examination in candidacy for the degree. This examination is normally taken when substantially all of the student's coursework has been completed. A final examination, in which the candidate must successfully defend his or her dissertation, culminates the program.

Doctoral candidates are expected to maintain a grade-point average of 3.2 throughout the doctoral program. The program also cooperates in interdisciplinary doctoral programs with the Program in Applied Mathematical Sciences (see the "Division of Mathematical Sciences" section in "Liberal Arts").

Special Faculty Strengths

The American Council on Education's most recent ranking of civil engineering departments offering graduate study placed the University of Iowa programs in Civil Engineering in the top 40 of the more than 200 in the nation.

Admission

Each curriculum of the program is quite flexible, and students may be admitted from all disciplines of engineering as well as the mathematical and basic sciences.

An applicant for the master's degree program is expected to have a cumulative undergraduate grade-point average of 2.5 (A=4); usually, 3.0 is expected. For admission to candidacy for the doctorate, the minimum grade-point average is 3.2 based upon previous graduate work. Applicants whose grade-point averages are slightly lower are invited to correspond regarding admission possibility.
All applicants must meet the general admission requirements of the Graduate College (see "Graduate College").

Financial Aid
A significant number of research assistantships are available on a variety of research projects, so it is a limited number of teaching assistantships and fellowships. Selection of recipients usually is based on academic achievement and research interest.

Electrical and Computer Engineering

Program Chair: Robert C. Assche

The undergraduate program leads to a Bachelor of Science degree in electrical engineering, with a strong emphasis on computer engineering. The curriculum includes electronics, instrumentation, control and communication systems and computers. Electrical engineers are employed in semiconductors, aircraft, radio, television, computer and power industries. With the B.S. degree, the electrical engineer is prepared to do engineering work in design, development, manufacturing, testing, market analysis, purchasing, field service and management. The employer outlook for the foreseeable future is quite favorable.

To prepare the student for the electrical engineering profession, the curriculum provides a strong background in circuits, computers, control systems, electronics, magnetic communication theory, electronics and design. In addition to the basic engineering core of mathematics, engineering design, engineering science and humanities, Technical electives and advanced programs are offered in biomedical systems, computer systems, electronic circuits, signal processing, digital and control systems, applied physics, power and solid-state devices.

Curriculum

Sophomore Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
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<tbody>
<tr>
<td>566:10 Dynamics</td>
<td>252:373 Engineering Calculus III</td>
</tr>
<tr>
<td>S20:16 Thermodynamics I</td>
<td>560:13 Introduction to Science I</td>
</tr>
<tr>
<td>540:11 Dynamic Systems Analysis</td>
<td>Total</td>
</tr>
</tbody>
</table>
| Total | 17 h.

Second Semester

| 226:38 Differential Equations and Linear Algebra | 540:25 Electromagnetic Theory |
| 545:20 Digital and Computer Systems | 540:12 Dynamic Systems Analysis II |
| Sociocultural elective | Total |
| Total | 17 h.

Junior Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>252:373 Engineering Calculus III</td>
<td>540:25 Electromagnetic Theory</td>
</tr>
<tr>
<td>545:60 Principles of Electrical Engineering Design I</td>
<td>545:40 Electronic Circuits I</td>
</tr>
<tr>
<td>545:60 Communication Systems</td>
<td>Total</td>
</tr>
<tr>
<td>*545:91 Professional Seminar</td>
<td>545:91 Professional Seminar</td>
</tr>
<tr>
<td>Total</td>
<td>Sociocultural elective</td>
</tr>
</tbody>
</table>
| 15 h. | 4 h.

Second Semester

| 252:373 Engineering Calculus III | 545:40 Electronic Circuits I |
| 545:60 Control Systems | Total |
| 545:91 Professional Seminar | Sociocultural elective |
| Total | 16 h.

Senior Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>545:70 Electrical Engineering Materials and Devices</td>
<td>545:91 Principles of Electrical Engineering Design II</td>
</tr>
<tr>
<td>*545:31 Professional Seminar</td>
<td>*Science core elective</td>
</tr>
<tr>
<td>*545:31 Professional Seminar</td>
<td>Sociocultural elective</td>
</tr>
<tr>
<td>Technical elective</td>
<td>Total</td>
</tr>
</tbody>
</table>
| Total | 16 h.

Second Semester

| 545:80 Principles of Electrical Engineering Design IV | 545:91 Principles of Electrical Engineering Design I |
| 545:91 Professional Seminar | Total |
| 545:91 Professional Seminar | 19 h. |
| Total | 19 h. |

*Professional seminar must be taken at least once in the junior year and once in the senior year.

**Science core electives:
- 520:20 Mechanics of Rigid Bodies
- 560:19 Mechanics of Deformable Bodies
- 582:37 Engineering Management
- Biological science course

Graduate Program

The Electrical and Computer Engineering Program offers curricula leading to the Master of Science and Doctor of Philosophy degrees. Thesis and nonthesis M.S. programs are available, and either may provide 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, with the advisor, forms an individual program, with freedom of choice bounded only by a broad range of topics imposed by the Graduate College and by the program, foreign languages and research tools, for example, and not required by the Graduate College or by the program, but are introduced into the program by the student and advisor to the extent that they are appropriate in light of the particular student's goals.

The program recognizes the student's desire to complete degree requirements as promptly as possible without sacrifice of quality, and encourages the student to proceed toward gradation as rapidly as possible.

The basic program, which is fundamental to electrical and computer engineering, has a wide application, and this has resulted in
interdisciplinary research in areas such as biomedical engineering, computer systems, and applied mathematics. 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. Well-established and funded research laboratories exist in the following areas:  

Applied Physics

Plasma-physics and electro-optics investigations of non-linear specialized laboratories in both the Engineering Building and Physics Research Building. Typical projects involve non-linear wave interaction, plasma instabilities, laser optics, and acoustic wave behavior.

Applications to Biology and Medicine

Computer-assisted electrophysiology, heart arrhythmia analysis, drug infusion, and other medically related computer investigations utilize another laboratory with its own real-time computer system. These projects involve close collaboration with colleagues in the College of Medicine.

Control Systems

In cooperation with outside agencies, several projects applying modern control theory are in progress. These include stability considerations, time delay, and digital implementation. In the control laboratory, investigation of real-time digital control, nonlinear system theory, and digital estimation utilize mini- and micro-computers.

Computer Systems

Fault-tolerant subsystem design and reliable computer organizations are typical project areas. Other topics include data security, data communications, networks, and self-checking systems. In cooperation with nearby industry, the program also offers off-campus courses in electrical and computer engineering.

Master of Science

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 electrical engineering undergraduates, and at least nine semester hours of coursework outside of electrical engineering, ordinarily from mathematics and physics. With thesis, up to eight semester hours of the 30 semester hours may be research credit.

Without thesis, at least 3 semester hours of 547/198 Individual Investigations are required. In addition to the 12 semester hours in electrical engineering, this independent study is to be a senior project completed under the supervision of the student's program adviser. The candidate for the master's degree in electrical engineering must also successfully complete a final examination which is conducted by a committee of at least three faculty members, of which the adviser is chair. One part of the final examination must consist of oral defense of the thesis, for thesis candidates, or of the materials in 547/198 Individual Investigations, for non-thesis candidates.

Doctor of Philosophy

Requirements other than these stated in the University's graduate manual are:
Selection of a program adviser and an area of specialization. The Program Committee, based on at least four faculty members, of which the adviser is chair, will consult with the student and determine the courses the student will take.
No less than 72 semester hours of credit in a coherent program acceptable to the adviser and approved by the graduate committee, with at least 45 semester hours of credit earned in normal courses, including 30 semester hours in courses numbered 600 and above.
Successful completion of the Ph.D. qualifying examination;
Successful completion of the Ph.D. comprehensive examination;
Successful completion of a research program; and
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. A 3.0 for Ph.D. students. An M.S. student with a grade-point average less than 2.7 but better than 2.0 on courses in electrical engineering, mathematics and physics may be admitted on probation. Students with baccalaureate degrees in related areas (e.g., physics, mathematics and computer sciences) may be admitted. In such cases, additional coursework without graduate credit may be required.

Each applicant is reviewed on an individual basis. Extenuating circumstances may permit deviations from the normal standards.

Engineering

Program: Ph.D. George M. Lencz
Faculty: J. Wayne Dugan, D. Luis Hwang, Rangsi Leelsasarto, E. McClellan
Assistant professor: James Anderson
Degree offered: Ph.D.

The increasing emphasis on interdisciplinary and nontraditional 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 objectives of the School 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 then be used to develop those areas of special interest to the student which lead to the choice of the underspecified 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 guarantee 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 which satisfies the specific objectives of the student. The sequence is selected not later than the fifth semester of study and must be approved by the Program Review Committee (PRC). The PRC is also responsible for monitoring the progress of all students in the program and offering suggestions and advice as required.

Curriculum

Sophomore Year
First Semester
25M:57 Engineering Calculus III 4 s.h.
520:18 Thermodynamics 4 s.h.
540:11 Dynamic Systems Analysis I 3 s.h.
560:15 Materials Science I 3 s.h.
560:25 Dynamics 3 s.h.
Total 17 s.h.

Second Semester
25M:36 Differential Equations and Linear Algebra 4 s.h.
540:12 Dynamic Systems Analysis II 3 s.h.
560:34 Mechanics of Deformable Bodies 3 s.h.
540:35 Electromagnetic Theory 4 s.h.
560:36 Electromagnetic Theory 3 s.h.
Total 17 s.h.

Junior Year
First Semester
560:36 Probability and Statistics for Engineering and Physical Sciences 3 s.h.
25M:58 Physics I 3 s.h.
560:37 Mechanics of Fluids and Transfer Processes 4 s.h.
580:21 Principles of Design I 3 s.h.
Socio-humanistic elective 3 s.h.
Total 16 s.h.

Second Semester
582:22 Principles of Design II 3 s.h.
540:27 Engineering Management 3 s.h.
Technical elective 3 s.h.
Socio-humanistic elective 4 s.h.
Total 16 s.h.

Senior Year
First Semester
Design course 3 s.h.
Technical electives 12 s.h.
Socio-humanistic elective 3 s.h.
Total 18 s.h.

Second Semester
Design course 3 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 the College of Engineering policy.

Industrial and Management Engineering

Program emphasis: Industrial Management

Student options I: Design, II: Operations Research Emphasis

The industrial and management engineers have 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 adviser to management, or he may be in a line unit participating directly in management decisions. His job title might be operations analyst, industrial engineer, systems analyst or engineer, contracts research analyst, staff consultant, supervisor or manager. He may be employed by a manufacturing firm, a government agency or by 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 invoked 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, physical sciences, 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 of courses in management, science, mathematics, design, social sciences and humanities. Advanced courses include specialty courses in manufacturing, operations research, statistics, business engineering, and digital computation. An undergraduate handbook, describing the program in greater detail, is available upon request.

Curriculum

Sophomore Year
First Semester
560:15 Materials Science I 3 s.h.
580:27 Engineering Management Science 3 s.h.
25M:37 Engineering Calculus III 4 s.h.
540:11 Dynamic Systems Analysis I 3 s.h.
Total 16 s.h.

Second Semester
540:12 Dynamic Systems Analysis II 3 s.h.
560:10 Dynamics 3 s.h.
Total 6 s.h.
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 his or her 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 engineering statistics; materials processing and transportation.

Student programs emphasize operations research or engineering management and human factors may be developed from Division of Systems Engineering courses offered mainly by Industrial and Management Engineering program faculty. M.S. students desiring a more general program may combine these emphases at the M.S. level. Those desiring some specialization in engineering statistics, computing or materials processing may accommodate these preferences through the combination of Industrial and Management Engineering program courses and appropriate electives from other programs and departments of the university. Ph.D. student programs center either in the areas of operations research and engineering 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 a minimum grade-point average of 3.00 and an acceptable score on the Graduate Record Examination (typically at least 450 Verbal, 650 Quantitative). Students may be considered for conditional admission with a 2.30 grade-point average and lesser GRE scores. Students from business and 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 2.75 and regular acceptance by the Industrial and Management Engineering program faculty or be dismissed. The minimum M.S. program requires 30 semester hours of coursework and research. Students may choose either a thesis or a nonthesis program, although research seminars will be required to write an M.S. thesis as a condition of their support. All students, however, are encouraged to obtain the master's degree with distinction. Students desiring enrollment in a Ph.D. study are especially advised to select the Ph.D. option. A tentative plan of study for each student is determined through consultation with the thesis advisor. The final plan of study is reviewed by the student’s examining committee, approval by the Industrial and Management Engineering program chair and by the Graduate College dean.

Electing students in all programs will find some background in computer programming and probability and statistics helpful. Engineering management and human factors students will find elementary psychology and sociology helpful economics useful preparation. Computer science students may be required for students in nonengineering backgrounds.

To be eligible for the M.S. degree, the student is required to maintain a minimum grade-point average of 3.0 on a minimum of
Extension and Guided Self-Study

In cooperation with the Education Division, program faculty will periodically offer extension classes in Corvallis, Duluth, or the Quad Cities. The program chair should be notified 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. 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 chair: Venkata G. Patel

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 nonprofessional 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 thermodynamics, energy, mechanical systems, heat transfer, gas dynamics, solid mechanics, and the promising interdisciplinary areas of biomechanics and optimal design.

Undergraduate Program

The undergraduate program in mechanical engineering provides 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 thermal systems. The undergraduate curriculum provides a substantial number of electives in both the technical and non-technical humanities areas. In consultation with his or her advisor, a student can plan to develop capabilities to meet specific goals within the framework of the curriculum. All upper-division students are strongly encouraged to undertake individual projects involving either an experimental or analytical design solution to a current problem.

Curriculum

Sophomore Year

First Semester

222:37 Engineering Calculus III 4 s.h.
550:10 Dynamics 3 s.h.
540:11 Dynamic Systems Analysis I 3 s.h.
550:15 Materials Science I 3 s.h.
520:16 Thermodynamics I 4 s.h.
Total 17 s.h.

Second Semester

224:38 Differential Equations and Linear Algebra 4 s.h.
540:12 Dynamic Systems Analysis II 3 s.h.
540:25 Electromechanical Thermo 3 s.h.
520:19 Mechanics of Deformable Bodies 3 s.h.
Socio-humanistic elective 3 s.h.
Total 17 s.h.

Junior Year

First Semester

580:39 Probability and Statistics for Engineering and Physical Sciences 3 s.h.
298:82 Physics I 3 s.h.
580:21 Principles of Design I 3 s.h.
520:20 Mechanics of Fluids and Transfer Processes 4 s.h.
529:91 Professional Seminar 0 s.h.
Socio-humanistic elective 4 s.h.
Total 17 s.h.

Second Semester

398:83 Physics II 3 s.h.
528:90 Experimental Engineering 4 s.h.
528:94 Thermodynamics II 3 s.h.
Candidates for the degree are expected to maintain at least a 3.0 grade-point average, in addition to passing the required examinations. Students not writing theses will take both written and oral examinations; students writing theses may expect emphasis on the thesis in the required examinations.

Doctor of Philosophy

The Doctor of Philosophy degree is granted on the basis of achievement rather than on the accumulation of semester hours of credit. However, the student is normally expected to earn approximately 50 semester hours beyond the M.S. degree. About 25 semester hours are devoted to the dissertation and about 15 semester hours are devoted to mathematics or closely related areas. This leaves about 20 semester hours of major courses to be taken in the Program. This latter group will be chosen in consultation with the advisor and with consideration of the student's choice of specialty.

Doctoral candidates are expected to maintain a 3.50 grade-point average throughout their doctoral program.

Ph.D. students may be required to have one year of study of a foreign language. For this requirement, each student's program and specialities will vary and the required recommendation is made by the student's advisor. Students from non-English-speaking countries may use their language proficiency as well as their required competency in English to meet this requirement.

During research for and writing of their dissertation, students work closely with their thesis supervisor who usually is their academic advisor. The comprehensive examination is set to take place prior to the student's last term of registration. The final examination, which is oral, on the dissertation, culminates the program.

Financial Aid

There is a considerable amount of support available for graduate students. A significant volume of research work relies on utilizing graduate students as research assistants. Also, some graduate students are employed as teaching assistants.
to the undergraduate student through a series of integrated courses at various levels. In addition to serving students in all engineering curricula through the core program, the Division offers specialized courses for students majoring in biomedical, 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 and Environmental Engineering and Mechanical Engineering 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. thesis research under their direction are best illustrated by listing the currently active research projects.

**Active Research Projects**

**Fluid Mechanics:** Dispersion and dilution of passive and reactive contaminants in rivers and lakes; experimental and theoretical studies of turbulent boundary layers, wakes, jets and plumes; unsteady turbulent and transitional flows; analysis and numerical solution of problems of ship hydromechanics; physiological flow phenomena in cardiovascular and intestinal systems; wind loads on structures; detection and removal of warhead parts.

**Hydraulic Engineering:** Design, modeling and on-site testing of intakes and outfall structures; river management; thermal discharges into natural water bodies; cooling tower performance; sediment transport; formation of ice covers and ice jams; strength of ice; ice forces on structures.

**Instrumentation:** Laser and hot-wire anemometry; measurement of small and very low fluid velocities; real-time acquisition and processing of data.

**Thermal Sciences:** Biological heat transfer; dynamics of aerosol cloud suspensions; radiant heat transfer through real plates; radiative properties of rough surfaces; remote heat-flux measurement; design, performance and heat transfer studies of solar-energy collectors and thermal-storage systems; aerodynamic heating; plume nonequilibrium; power-plant cooling system economics of power production.

**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 nitrication in sewers; sludge stabilization in wastewater treatment; removal of sludge from water and wastewater treatment; anarmonic treatment of pyritic gas scrubber wastes; biological reduction for the removal of sulfates from ground water; enhanced treatment of high strength thermal sludge conditioning wastes; pilot scale evaluation of micro-screening for sludge dewatering.

**Water Resources:** Economics of water usage, management of reservoirs; storages, flows and reservoirs; 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 facilities for 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 at the facilities of the Hydraulics Laboratory of the Iowa Institute of Hydraulic Research. Experiments in the environmental sciences are performed at the laboratories in the University Water Plant and the P.F. Morin Sanitary Engineering Laboratory.

Since most members of the senior research staff of the Iowa Institute of Hydraulic Research hold professional appointments in the Division of Engineering, the teaching and research functions 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, water resources and those aspects of thermal sciences related to diffusion and dispersed dilute heat in water.

The Institute houses some of the most modern research facilities in the world. The equipment includes a 300-ton swing tank, several hydraulic flumes and wind tunnels, a dispersion flume, a wave tank, a special low-temperature low-fate facility for investigation of jet phenomena, and an environmental hydromechanical flume for modeling of atmospheric flows. A new ice-forming tank is under construction. The laboratory is also equipped with a computer-based 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. Morin Sanitary Engineering Research Laboratory, situated on the site of the Iowa City Municipal Wastewater Treatment Plant, and in the Water Plant Laboratory, located in the University Water Treatment Plant.

The Morin Laboratory is devoted to research activities in the wastewater treatment area, it includes a modern wastewater treatment facility and pilot-scale studies of the physical, chemical, and biological operations and processes of wastewater treatment. Permanent pilot facilities at the Morin Laboratory include a 10,000-gallon aeration tank, a gallo-per-minute activated sludge treatment system, and a gallo-per-minute rotating biological aerobic 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 analysis of water and provides space for both bench and pilot scale experiments. The Mississippi River, the Iowa River, which flows through the University Campus, and the Cogswell Lake, located approximately 5 miles upstream, serve as "natural laboratories" for water quality and limnological research.

Facilities for research in thermal sciences consist of an aerodynamic collector test stand with provision for simultaneous evaluation of several collectors, solar energy thermal storage systems, electric and acoustic aerosol collection and agglomeration apparatus, an RF plasma facility with spectroscopic diagnostic equipment, a special spectroscopic reflectometer for radiant property measurement on rough surfaces, an interferometric holography laboratory and a variable flow loop under development. The laboratories are served by a minicomputer-
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 supplies some 30 to 35 graduate students half-time to work on projects in fluid mechanics, hydraulic engineering, water quality and water resources. The Division of Energy Engineering offers similar assistantships for student participation in research projects in the thermal and acoustical environments. A limited number of fellowships and teaching assistantships are also available from the Division. Graduate students receiving financial support from the Division are required to register for at least nine semester hour course and/or research work.

The Division of Energy Engineering also encourages undergraduate involvement in its research through the University Work Study Program and the Undergraduate Research Participation Program.

Courses
Core Engineering Program Courses
528.10 Thermodynamics I
3.0 b.
528.11 Thermodynamics II
3.0 b.
528.12 Exergetic Bio-Engineering
3.0 b.
528.13 Advanced Analytical Fluid Mechanics
3.0 b.
528.14 Fluids and Heat Transfer
3.0 b.
528.15 Microelectronics
3.0 b.
528.16 Numerical Methods for Engineering
3.0 b.
528.17 Advanced Analytical Fluid Mechanics
3.0 b.
528.18 Numerical Methods for Engineering
3.0 b.
528.19 Heat Transfer
3.0 b.
528.20 Advanced Analytical Fluid Mechanics
3.0 b.
528.21 Advanced Fluids and Heat Transfer
3.0 b.
528.22 Advanced Analytical Fluid Mechanics
3.0 b.
528.23 Thermodynamics
3.0 b.
528.24 Numerical Methods for Engineering
3.0 b.
528.25 Advanced Analytical Fluid Mechanics
3.0 b.
528.26 Advanced Analytical Fluid Mechanics
3.0 b.
528.27 Advanced Analytical Fluid Mechanics
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528.28 Advanced Analytical Fluid Mechanics
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528.29 Advanced Analytical Fluid Mechanics
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528.45 Advanced Analytical Fluid Mechanics
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528.46 Advanced Analytical Fluid Mechanics
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528.70 Advanced Analytical Fluid Mechanics
3.0 b.
528.71 Advanced Analytical Fluid Mechanics
3.0 b.
Environmental Sciences

231:155 Principles of Environmental Engineering 3 a.b.
Physical, chemical and biological principles of water and wastewater treatment. Conservation, pollution control and management. Prerequisites: ENGR 110 or equivalent grading in ENGR 105.

231:157 Hydraulic Systems Design In Environmental Engineering 3 a.b.
Application of hydrologic principles to the removal of contaminants from water and waste systems in environmental engineering with emphasis on water transmission and wastewater wet-weather flow control and treatment systems.

231:158 Environmental Chemistry Laboratory 3 a.b.
Laboratory experiments in the qualitative, chemical and numerical analysis of water, wastewater and sediments. Prerequisite: 231:152.

231:159 Environmental Microbiology 3 a.b.
Fundamentals of environmental microbiology with application to water treatment systems. Prerequisite: 231:152.

231:162 Ecosystem Technology 3 a.b.
Physiological and chemical characteristics of natural waters with emphasis on the relationship between fish and the physical characteristics of the aquatic environment. Prerequisite: 231:152, 231:154.

231:164 Environmental Engineering and Planning 3 a.b.

231:167 Environmental Engineering Design 3 a.b.
Practical aspects of the design of water and wastewater treatment systems. Prerequisite: 231:150.

231:206 Air Pollutants and Air Quality 3 a.b.
Sources, characteristics, and effects of environmental quality of air pollutants and air quality analysis and design of control systems linking the recovery of resources from waste products. Prerequisites: senior or graduate standing in engineering.

231:250 Advanced Environmental Systems Design 3 a.b.
Physical, chemical and biological aspects of natural gas and surface waters and the effects of pollutant discharge on water quality. Prerequisite: 231:152, 231:154.

231:251 Environmental Systems Modeling 3 a.b.

231:252 Advanced Environmental Chemistry 3 a.b.
Lectures and laboratory purifying advanced concepts and laboratory methods of environmental chemistry. Prerequisites: 231:152, 231:154.

231:254 Advanced Environmental Technology 3 a.b.
The nature and sources of toxic substances in the environment and their metabolic and ecological effects on plants and other living forms. Prerequisite: 231:150, 231:154.

231:270 Environmental Systems Laboratory 3 a.b.
Laboratory evaluation and demonstration of the units operation and processes for water and wastewater treatment with emphasis on the interpretation of treatment concept in environmental systems. Prerequisite: 231:150.

231:287 Industrial Water Quality Control 3 a.b.
Quality, quality control and treatment of industrial processes waters. Sources, characteristics, and control of industrial wastewater collection and treatment systems to meet efficiency standards and environmental regulations. Prerequisite: 231:150.

Fluid Mechanics

231:05 Flow Systems in Environmental Engineering 3 a.b.
Application of the principles of technology and hydraulics to the analysis, design and operation of water and wastewater treatment systems. Prerequisites: ENGR 120.

Kinetics of fluid flow; introduction of the definition of the flow of fluids through pipes, turbines, and energy. A study of fluid dynamics and Navier-Stokes equations, applying them to flow situations. Introduction to the effects of vorticity, gravity, compressibility, and surface tension in elements of potential flow theory. Prerequisite: 231:05.

231:188 Intermediate Master's of Flows II 3 a.b.
Potential and ideal flows; boundary layer concepts; boundary layers, wakes and jets, introduction to turbulent flows in conduits, boundary layers, wakes and jets compressible boundary and turbulent flows. Continuation of 231:150, which is prerequisite.

231:217 Experimental Method in Fluid Mechanics 3 a.b.
Design and execution of several experiments, each student required to plan and execute a specific experiment with the guidance of principal instructor. Supplemental studies include on experimental methods and engineering experiments. Prerequisites: 231:20.

231:317 Elements of Soil Flow 3 a.b.
Thermodynamics of unsaturated flow with applications of continuity, momentum and energy equations, flow with various saturated areas, with and without filtration, with and without heat transfer. Prerequisites: 231:188.

231:318 Geophysical Fluid Dynamics 3 a.b.
Basic principles in compressible fluids, dynamics of a perfect gas, inviscid and shock waves methods of characteristics and Riemann, isentropic and hypersonic flows, boundary layer theory, and multiphase fluids. Lecture, written assignments. Prerequisite: 231:188.

231:319 Aerodynamics 3 a.b.
Review of thermodynamics and full mechanics, potential flow, complex variables and conformal transformation, two-dimensional artifical theory, lift and maneuver, influence of viscosity, aerodynamic characteristics of wings in subsonic, transonic and supersonic flow, single wing and multivane wings. Prerequisites: 231:05.

231:325 Waves and Flow 3 a.b.
Introduction to waves and flow phenomena, including wave generation and flow. Prerequisites: 231:05.

231:345 Turbulent Flow Theory 3 a.b.
In-depth study of governing form including influence of turbulence, heat and mass transfer, phase change, supersonic flow. Prerequisites: 231:05.

231:355 Advanced Engineering Thermodynamics 3 a.b.
Fluid flow and heat transfer. Prerequisites: 231:317.

231:359 Advanced Engineering Thermodynamics 3 a.b.
Flow of fluid through, independent for steady and unsteady conditions, viscous flow, heat transfer, basic topic and singular solutions in various coordinate systems, linear motion and thermodynamic properties, cardan's and integral equations, linear systems, and differential equations. Prerequisites: 231:05, 231:150.

231:365 Advanced Engineering Thermodynamics 3 a.b.
Advanced differential equations. Prerequisites: 231:05, 231:150.

231:367 Advanced Engineering Thermodynamics 3 a.b.
Advanced differential equations. Prerequisites: 231:05, 231:150.

231:369 Advanced Engineering Thermodynamics 3 a.b.
Advanced differential equations. Prerequisites: 231:05, 231:150.

Engineering Sciences

231:104 Principles of Engineering 3 a.b.
Nature, environment and the effect of the natural environment on the design and operation of systems in engineering. Special application of laws and concepts to the environment and its relationship to technology. Prerequisites: 90-125 or consent of instructor.

231:109 Kinematics of a Plane 3 a.b.
Fundamental treatment of kinematics of a plane. Topics include logic diagrams, geometrical sequences, the nature of plane and particle translating motions, fundamental laws and geometrical concepts, energy change, potential systems for energy, and mechanics of fluids. Prerequisite: 231:101 or consent of instructor.

231:110 Stress Analysis of Solids 3 a.b.
Fundamental treatment of stress analysis of solids. Topics include stress diagrams, spherical sequences, the nature of stress, and methods of stress analysis. Prerequisite: 231:101 or consent of instructor.
528:775 Surface Water in Florida
3 h.
Introduction and characteristics of Florida's water resources; origin and distribution of fresh water; surface and ground water systems; natural and man-made water systems; and human and environmental impacts.
Prerequisite: 528:185.

528:271 Geophysical and Geologic Landscape Dynamics
3 h.
Dynamics of geologic processes, effects of underground and surface water, earth surface processes, and the interaction of geologic processes with the landform.
Prerequisite: 528:185.

528:272 Environmental Geologic Processes
3 h.
Overview of geologic processes, geologic time, and the interaction of geologic processes with the landform.
Prerequisite: 528:185.

528:273 History of the Florida
3 h.
History of Florida, including the Spanish, French, and American periods.
Prerequisite: 528:185.

528:274 Historical Field Trip
2 h.
Field trip to selected sites in Florida, including historic sites and natural areas.
Prerequisite: 528:185.

528:275 Geologic Field Trip
2 h.
Field trip to selected sites in Florida, including historic sites and natural areas.
Prerequisite: 528:185.

528:280 Hydrologic Engineering
3 h.
Introduction to hydrologic engineering, including water quality, water supply, and water resources planning.
Prerequisite: 528:185.

528:184 Hydraulics
3 h.
Classification and applications of hydraulic structures; principles of fluid mechanics; and analysis of flow through pipes and open channels.
Prerequisite: 528:185.

528:185 Water Resource Applications
3 h.
Applications of water resource systems to agricultural, industrial, and municipal use.
Prerequisite: 528:185.

528:210 Advanced Topics in Environmental Science
3 h.
Recent developments in environmental science, including topics such as renewable energy, environmental justice, and sustainability.
Prerequisite: 528:185.

528:101 Systems Engineering
3 h.
Introduction to the principles of systems engineering, including systems analysis, design, and implementation.
Prerequisite: 528:185.

528:102 Advanced Topics in Environmental Science
3 h.
Recent developments in environmental science, including topics such as renewable energy, environmental justice, and sustainability.
Prerequisite: 528:185.

528:200 Seminar on Water Quality
2 h.
Seminar on current issues in water quality, including topics such as water pollution, water resource management, and water quality regulation.
Prerequisite: 528:185.

528:201 Seminar on Water Quality
2 h.
Seminar on current issues in water quality, including topics such as water pollution, water resource management, and water quality regulation.
Prerequisite: 528:185.

528:210 Advanced Topics in Environmental Science
3 h.
Recent developments in environmental science, including topics such as renewable energy, environmental justice, and sustainability.
Prerequisite: 528:185.

528:200 Seminar on Water Quality
2 h.
Seminar on current issues in water quality, including topics such as water pollution, water resource management, and water quality regulation.
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Seminar on current issues in water quality, including topics such as water pollution, water resource management, and water quality regulation.
Prerequisite: 528:185.

Division of Information Engineering
Chair: Robert C. Clabescher
Professor and Graduate Coordinator: Jong H. Skiene
Assistant Professor: Nestor I. Birckman, Robert D. Fox, James M. Kreider, Mark W. Laffey, and Peter F. Robinson

The Division of Information Engineering coordinates laboratories in the Electrical Engineering Program with the Core Engineering Dynamic Systems Analysis courses and the Electromagnetic Theory
The primary mission of the Division is the analytical and experimental study of material behavior, the development of pertinent physical laws and the application of such laws to situations of engineering interest. The Division is responsible for developing and operating courses of instruction, associated laboratories and graduate study in materials engineering within the Biomedical Engineering, Chemical and Materials Engineering, Civil and Environmental Engineering, and Mechanical Engineering programs. The disciplinary areas associated with the programs are materials science and constitutive theory, structural analysis and design, foundations of chemical and transport processes, and mechanics and mechanical design.

The Division supports research activity for the faculty and students in the Division and assists in the recruitment of qualified graduate students. Research in the Division is of a diverse nature and encompasses the fields of experimentation in and mathematical representation of the mechanical behavior of materials at the phenomenological as well as molecular level, basic study of transport processes with particular emphasis on mechanisms of diffusion and surface phenomena, modern optimization theories as they relate to the analysis and design of complex structural and mechanical systems, failure of materials through experimentation and basic understanding of failure mechanisms, application of the principles of continuum and theoretical mechanics to the analysis of biomedically related systems and the design of prosthetic devices, study of the properties of granular media including powders, soils and the effect of particle shape on physical properties, and the improvement of laws of behavior of concrete and composite building materials in the design of large structures.

Special Facilities

Biomechanics Laboratory

The laboratory is equipped for research in stress analysis and modeling associated with biomechanical systems. Included are a photo-electric bench with 12-inch transmission polarscope, photo-elastic oven, fringe multiplier, contour projector, photo-stress meter, and record equipment.

Chemical Engineering Laboratory

Located in the Chemistry-Botany Building, this laboratory includes pilot plant equipment for the study of industrial evaporation, distillation, drying, fuel flow and heat transfer. In addition there are a subcritical nuclear reactor and facilities for bio-materials research and investigation of plastics and other materials. Laboratory aids for individual research by graduate students are equipped with chromatographs, analog computers and other instrumentation. 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 an RCA EMU-38 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. The facility complements the electron facility involving the mechanical behavior of materials. Such phenomena as the following may be studied by use of thin foil technique: the behavior and distribution of dislocations as a result of plastic deformation, stacking fault energy, subgrain boundary formation, radiation damage. Electron diffraction 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 Laboratories

This facility consists of the Metal Casting and Welding Laboratory, the Heat Treatment and Metallurgical Laboratory, all equipped for 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 and testing and molding equipment, pyrometers, non-destructive testing, machine tools and tool room dynamometers, metal forming equipment, metallographic specimen mounting press and polishers, a variety of metallurgical 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, plastics 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 an MTS 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 the laboratory contains a modern creep testing capability with a thermally controlled chamber for the testing of materials at high temperature. 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 including modern methods of measurement and analysis including computers, a variety of strain gauges, a photo-alidade laboratory and other conventional instrumentation. Particular areas 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 Particles Laboratory

This laboratory is modestly equipped with simple devices such as characterizing bulk properties of powders: various mixers, grinders, mixing equipment: optical microscopes: sintering furnaces: mounting and polishing equipment. In addition there is access to a scanning electron microscope.pm 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 laboratory also contains a prestressing bed and frame which permits construction of prestressed concrete structural members. A soils laboratory contains consolidation and triaxial testing equipment of the latest design.

Divisional Financial Aid

Support is available for graduate students from several sources including assistantships, scholarships and federal grants. Stipends are comparable to those of other departments and academic units of the University and are granted on the basis of academic excellence and research interests of the student. Graduate enrollment is approximately 60 students. Limited financial aid and for undergraduate students is available from assistantships and grants. These are in addition to the scholarships bestowed by the University and the College of Engineering.

Courses

Core Engineering Program Courses

500:7 Statics 2 s.h.

500:8 Dynamics 2 s.h.
Vector algebra, Newton’s laws, dynamics of rigid motion, multibody systems, and rigid bodies in plane motion. Applications. Prerequisites: 500:7, 500:8.

500:10 Materials Science I 2 s.h.
Foundation course of introduction in material science to allow students to understand and evaluate materials at atomic, micro and macro levels. Prerequisite: 500:7.

500:13 Mechanics of Deformable Bodies 2 s.h.
Elementary theory of deformable bodies, stress, strain, application to beams, columns, plates, stress and failure of structural materials. Axial, bending, torsion, combined and buckling tests are treated. Prerequisite: 500:7.

Special Program Courses

500:86 Experimental Engineering 4 s.h.
Principles of physical measurements: standards, calibration, estimation of errors; static and dynamic performance of measuring systems; laboratory experiments: planning experiments. Prerequisites: prior standing. Same as 500:96.

500:92 Mechanical Engineering Design II 3 s.h.
Primary emphasis on the formulation of a substantial design project culmination of 500:92. Prerequisite: 500:92. Same as 500:92.

500:93 Mechanical Engineering Design I 3-4 s.h.
Creative design projects in which students solve realistic engineering problems in their respective engineering. Projects are completed in collaboration with industry with the assistance of faculty associates. Prerequisite: 500:91.

500:94 Materials Engineering Design II 3 s.h.
Cohesion of 500:93. Prerequisite: 500:93 and senior standing.

General Courses

501:31 Surveying 3 s.h.
Theory of measurement, methods and computations, mapping, map surveying, geodesy surveying, photogrammetry and astronomy.

501:110 Numerical Calculations 3 s.h.
Development of algorithms for numerical differentiation and integration; solution of algebraic and differential equations with emphasis on digital computers; initial and boundary value problems. Prerequisites: 500:86. Same as 510:111.

500:113 Engineering Analysis 3 s.h.
Introduction to mathematical techniques important in engineering modeling: special functions, operational methods, integral transforms, variational techniques, partial differential equations, applications to engineering problems. Prerequisite: senior standing. Same as 500:113.

500:113 Mathematical Methods in Engineering I 3 s.h.

500:114 Mathematical Methods in Engineering II 3 s.h.
Theory and applications to dynamic of fluids and solids. Eigenvector analysis, vector difference equations, fluid and solid, variational methods, finite element method, finite element method. Prerequisites: 500:113. Same as 500:114.

502:211 Advanced Numerical Analysis 3 s.h.
Partial differential and integral equations by finite difference, finite elements and characteristics; variational methods, numerics stability, convergence, consistency, Sobolev boundary conditions, boundary conditions for the wave equation, Navier-Stokes and the heat equation in fluids and solids, variational methods. Prerequisite: 500:86. Same as 500:211.

502:212 Advanced Engineering Analysis 3 s.h.
Modeling of engineering problems with mathematical equations; solution techniques for differential equations; formulation of mathematical models; applications to fluids, mechanical and thermal systems. Prerequisites: 500:113. Same as 500:212.

Structural Analysis and Design Courses

503:31 Structural Analysis I 4 s.h.
Analysis of stresses in beams, frames and trusses; influence lines; deformation by classical methods; introduction to numerical analysis by computer and by moment distribution. Prerequisite: 500:19.

503:32 Structural Analysis II 4 s.h.
Concrete and reinforced in reinforced concretes; structural steel design; design of steel and reinforced concrete beams, columns and connections. Prerequisite: 503:32.

503:33 Structural Analysis III 4 s.h.
Concrete and reinforced in reinforced concretes; structural steel design; design of steel and reinforced concrete beams, columns and connections. Prerequisite: 503:32.

502:132 Advanced Structural Analysis 4 s.h.
Analysis of structures by use of digital computer; slope deflections, moment distribution, elementary matrix manipulation in structural analysis. Prerequisite: 503:31.

503:132 Structural Design I 2 s.h.

503:133 Structural Design II 2 s.h.
Design of steel and reinforced concrete buildings and bridges, load systems, bending, second order effects, column analysis, design of steel and reinforced concrete beams, columns and connections. Prerequisite: 503:31.

503:139 Reinforced Concrete Elements and Structures 2 s.h.
Analysis and design of statically determinate and indeterminate structures and simple structures, review of current practice and specifications. Prerequisite: 503:31.

503:140 Foundations of Structures 2 s.h.
Application of soil mechanics to foundations of buildings; bearing capacity and settlement analysis; stability of new slopes, earth pressures and retaining wall designs. Prerequisite: 503:31.

503:141 Advanced Structural Analysis by Numerical Methods 3 s.h.
Finite element analysis, relaxation and relaxation techniques. Statics and dynamics, element selection, numerical procedures applied to: deflection, buckling, vibration, foundations, influence lines. Prerequisite: 503:141.

503:142 Advanced Structural Design 3 s.h.

503:143 Advanced Structural Systems 3 s.h.
Variational methods, stability criteria, stability and stability buckling; columns, frames, columns, plates, rigid frames; buckling and torsional buckling, beam buckling approaches. Prerequisites: 503:141.

503:149 Earthquake and Seismic Design 3 s.h.
Earthquakes and their effects, seismic design; structural analysis and design of structures, design of structures, design of structures. Prerequisites: 503:149.

Chemical and Transport Processes Courses

504:11 Chemical Engineering Thermodynamics 3 s.h.
Applications of thermodynamic principles to chemical and physical processes: prediction of industrial property phase equilibrium and mixed equilibrium applied to multicomponent and multiphase systems. Prerequisite: 504:11. Same as 510:41.
Materials Phenomenology and Science Courses

592.18 Materials Science II 3 s.h.
To help the student appreciate that materials can be designed to give desirable properties and functional performance levels in order economically to fulfill design criteria. Prerequisite: 592.17.

592.71 Materials Processing I 3 s.h.
Processing of industrially important materials by casting, welding, melting, forging, hot work, reaction bonding and mechanical deformation and shaping. Prerequisite: 592.17.

592.78 Materials Science III 3 s.h.
Fundamental course for graduates students in the structure, properties, and fabrication of structural and ceramic materials. Topics include bonding, structural descriptions, atom movements, diffusion, and deformation of materials. Prerequisite: 592.49.

592.17 Materials Processing II 3 s.h.
Engineering and metallurgical aspects of casting and joining, including sintering, deformation, forging, and metallographic techniques. Prerequisite: 592.71.

592.13 Theories of Failure in Solids 3 s.h.
Definition and causes of fatigue and fracture, fatigue of brittle and ductile materials, and fracture of materials. Prerequisite: 592.17.

592.19 Surface Chemistry I 3 s.h.
Geometric foundations, contact of stress and strain tensors, analysis of stress and strain, fundamental physical equations, composite materials, and fundamentals of solid and liquid mechanics. Prerequisite: 592.18.

592.18 Surface Chemistry II 3 s.h.
Properties, compatibility characteristics and performance requirements of materials for indents and solid and hollow products in the future. Prerequisite: 592.19.

592.17 Fine Particle Characterization 3 s.h.
Description of the characterization of fine particles, based on an analysis of physical and chemical properties, now available, and potential. Methods and value of future process methods. Methods of chemical analysis (nuclear, electron, electron microscopy) methods for physical characterization (scanning electron microscopy, electron microscopy). Prerequisite: 592.17.

592.15 Materials Science IV 3 s.h.
Additional topics include nuclear and solid state, thermal transformation, spectroscopy, and vibrational and thermal properties. Prerequisite: 592.15.

592.13 Technical Topics in Materials Engineering 3 s.h.
An advanced course in specializing in materials engineering. Prerequisite: 592.17.

592.05 Theories of Viscoelasticity 3 s.h.
Linear theory of viscoelasticity; range of linear viscoelastic behavior. Theoretical foundations, time-temperature superposition principles, boundary and initial value problems. Prerequisite: 592.17.

592.17 Theory of Plasticity 3 s.h.
Classical theory of stability in terms of solid structure, plasticity theory based on internal variables and elasto-plastic strain concepts applicable to experimentally observed phenomena. Prerequisite: 592.17.

592.28 Electron Optical Methods 3 s.h.
Transmission electron microscopy, electron diffraction, scanning electron microscopy, electron diffraction and microscopy analysis. Prerequisite: 592.17.

592.27 X-Ray Particle Science and X-ray Spectroscopy 3 s.h.

Seminars, Advanced Topics, Research

591.31 Industrial Seminar II 3 s.h.
Lectures and discussions on topics of current interest in biomaterial engineering. Required of juniors and seniors in the industrial engineering program. Prerequisite: junior standing.

591.31 Industrial Seminar I 3 s.h.
Lectures and discussions on topics of current interest in biomaterial engineering. Required of juniors and seniors in the civil engineering program. Prerequisite: junior standing.

592.07 Senior Project 1 s.h.
A project course for the study of current projects or specific problems in civil engineering, and one written presentation. Prerequisite: senior standing.

592.06 Individual Investigations 3 s.h.
Directed individual study. Prerequisite: consent of instructor.

592.16 Readings in Materials Engineering 3 s.h.
For graduates students with prior knowledge of mechanics who desire credit in undergraduate work in another engineering course. Credit may be obtained after graduate standing.

592.18 Research in Chemical Engineering 0-12 s.h.
Discussion of relevant developments in chemical engineering, including the research of the students in the program. Prerequisite: graduate standing.

592.17 Materials and Mechanics Seminar 3 s.h.
Recent topics in mathematics, mechanics, and mechanics, presented and discussed by students, faculty, and guest lecturers. Prerequisite: graduate standing.

592.35 Contemporary Topics in Materials Engineering 3 s.h.
Topics significantly related to current and emerging needs of society; application of engineering design to meeting these needs; topical current topics include: safety, reliability, and design. Prerequisite: senior standing.

592.19 Individual Investigations 3 s.h.
Independent investigations of an approved topic on a semester or year basis. Prerequisite consent of instructor and major advisor.

592.93 Research Materials Engineering, M.S. Thesis 3 s.h.
Experimental and analytical investigation of an approved topic. Prerequisite: consent of program advisor and major advisor.

592.18 Advanced Topics in Biomaterial Engineering 3 s.h.
Topics dealing with current problems or developments in the field of biomaterial engineering. May be repeated. Prerequisite: graduate standing.

592.17 Advanced Topics in Mechanics 3 s.h.
Topics dealing with current problems or developments in the field of mechanics. May be repeated. Prerequisite: graduate standing.

592.93 Research Materials Engineering, Ph.D. Thesis 3 s.h.
Experimental and analytical investigation of an approved topic leading to a Doctor of Philosophy degree. Prerequisite: consent of program chair and major advisor.

Division of Systems Engineering

Chris J.M. Ulltanscher
Fauci, professors; J.W. Decker, J.M. Ulltanscher, J.S. Ramberg, J.R. Simon, professor emeritus; W.L. Baterley, assistant professor D.L. Brink, B. Chan, C.P. Division of Systems Engineering is an academic department at the University of Illinois at Chicago College of Engineering which offers, coordinates, and administers teaching, laboratory, and research activities associated with large complex systems analysis and design. Faculty of the Division develops and provides courses primarily in support of the undergraduate and graduate degree programs offered by the Program in Industrial and Management Engineering, the transportation portion of the Civil Engineering degree program, and the College undergraduate core curriculum. Research interests of the faculty are centered in areas associated with engineering management, human factors, operations research, engineering statistics, optimization, computing and transportation planning. Specific research projects recently completed, or ongoing, include the study of linearly constrained optimization problems with economies of scale, the use of discriminant analysis in medical diagnosis, the development of mathematical models for public utility rate design, engineering.
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extensive studies concerning auditory and visual displays, human engineering plunks of three compact erudites and the development of components for poverty equipment cost records, illiterate districting and a transit system evaluation package.

Facilities

The Division of Systems Engineering is responsible for development and supervision of the Engineering Computer’s Clinical Education (CBE) Laboratory. This laboratory provides on-line interaction with the University’s computer systems via video display and hard copy terminals. The laboratory also contains other commonly used computer accessory 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. Spacewise 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 grant and contract funds available to faculty of the division. Selection is based on academic competence and the research needs of the Division. Faculty 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 salaried instructor positions.

Course Descriptions

Core Engineering Program Courses

581:1 Introduction to Engineering 2 s.h.
Survey of the basic philosophy of engineering; the engineering approach to problem solving; engineering design projects requiring creativity, analysis, and systematic and integral problem solving.

581:2 Engineering Graphics 2 s.h.
Basic knowledge of contemporary engineering including orthogonal projection, geometric construction, pictorial representation, auxiliary views, sectioning, dimensioning, graphs and empirical equations, lines and planes, and vectors.

580:4 Engineering Competencies 2 s.h.
Digital computer programming utilizing FORTRAN and other languages; engineering computer applications using engineering operations, decision and transfer, loops, subroutines, input/output, and flow charts.

580:21 Principles of Design 3 s.h.
Emphasizes the nature, role, and scope of design. History and principles of design; principles of design; functional and aesthetic aspects; criteria and evaluation.

580:23 Principles of Design 3 s.h.
Principles and applications of engineering design. Includes analysis, synthesis, and evaluation of design alternatives. Topics include: mechanical, electrical, and design methods.

580:37 Engineering Management Science 3 s.h.
Aspects of management science pertinent to engineering science. Includes an analysis of the management function, operations research, including linear programming, decision theory, and stochastic processes. Includes applications to engineering problems and decision making.

580:39 Probability and Statistics for Engineering and Physical Sciences 3 s.h.
Probabilistic models, random variables, important probability distributions, descriptive statistics, point and interval estimation, tests of hypothesis, regression analysis, and statistical computer programs. Prerequisite: 550:26 or equivalent. Same as 295:59.

General Courses

587:101 Communication in Industry 4 s.h.
Introduction to communication within group of people, from group to large organizations, and to principles and techniques of effective communication. Classroom discussion and analysis of case studies. Prerequisites: 550:26 or equivalent. Same as 275:59. 587:102 Communication in Industry 4 s.h.
Introduction to communication within group of people, from group to large organizations, and to principles and techniques of effective communication. Classroom discussion and analysis of case studies. Prerequisites: 550:26 or equivalent. Same as 275:59.

587:107 Mathematical Modeling 3 s.h.
Fundamentals of mathematical modeling. Applications of mathematical modeling in the physical and social sciences. Emphasis on model building and its role in decision making. Students will develop a project during the course. Prerequisites: 587:101 and consent of instructor.

587:108 Lettering 1 s.h.

587:109 Mechanical Drawing 1 s.h.
Fundamentals of technical drafting, primarily for mechanical engineers. Emphasis on drafting practice. Prerequisites: 587:101 and consent of instructor.

587:111 Computer Applications 3 s.h.
Computer applications of principles of management, data processing, and computer networks. Includes the structure and design of the English language and problem solving with the data processor. Suitable for introductory users. Prerequisites: 550:26 or equivalent. Same as 295:59. 587:122 Regression Analysis 1 s.h.
Analysis of multiple linear regression models, residual

Design and Engineering Management Courses

588:121 Design of Work Methods 3 s.h.
Principles of design and analysis concerned in improving human factors in the productive environment of the office on methods and management. Fall. Prerequisites: 587:20, 575:20.

588:124 Operations Research Systems Design 3 s.h.
Principles of design and analysis, management, and evaluation of new or improved systems in an industrial, educational, or governmental organization. Prerequisites: 588:121. Open to new business and engineering. Spring. Prerequisites: 587:20.

587:127 Engineering Management Science 3 s.h.
Application of operations research to the engineering function for advanced-level students. Includes a study of the strategic and tactical aspects of operation and process selection and evaluation, decision under risk and uncertainty, and multiobjective and multiple criteria assignments, etc. Prerequisites: 587:20 or consent of instructor.

587:128 Engineering Administration 3 s.h.
The science and art of managing engineering. Courses in engineering administration include management, personnel, marketing, and industrial relations; engineering economics; and human resource management. Prerequisites: 587:20 or consent of instructor.

587:129 Information Systems Design 3 s.h.
Structure and design of computer-based management support systems; computer programs, hardware, software, communication networks, and the company structure; methods used in system design; case studies; managing the systems. Fall. Prerequisites: programming experience.

587:228 Engineering Administration II 3 s.h.
Management of enterprise; planning, controlling, and coordinating engineering effort, institutional assignments required. Summer. Prerequisites 587:20.

587:229 Software Systems for Management Science 3 s.h.
Ancient concepts of systems as relationships to management problems; overview of some major applications. Faculty organizations for large data bases, the management of software development, communication, and support functions. Prerequisites: programming experience in an imperative language. Spring. Prerequisites: programming experience.

587:230 An Introduction to Computer Science 3 s.h.
Advanced concepts of computer systems as relationships to management problems; overview of some major applications. Faculty organizations for large data bases, the management of software development, communication, and support functions. Prerequisites: programming experience in an imperative language. Spring. Prerequisites: programming experience.

Engineering and Applied Statistics Courses

588:121 Statistical Methods with Applications 2 s.h.
Principles of design and analysis. Emphasis on random variables, empirical distributions, and elementary hypothesis testing. Prerequisites: 587:20 or 588:15. Same as 275:30.

588:135 Quality Control, Reliability, and Engineering Management 3 s.h.
Basic control charts, sampling inspection and acceptance sampling, control charts, reliability estimation for continuous and systems. Spring. Prerequisites: 587:20 or 588:15. Same as 275:35.

680:21 Programming I 4 s.h.
Overview of a variety of important software development techniques, including testing, regression, and debugging. Prerequisites: 588:15 or 588:10.

680:211 Analysis and Design of Experiments 4 s.h.
Faculty

The graduate faculty comprises University faculty and administrative personnel in the areas of arts, associates and full professors. A 15-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-fifth of its enrollment is in the Graduate College. This unusually high ratio reflects the breadth of the University's graduate programs and the strength of a graduate faculty with a long tradition of personal and professional concern for students and the opportunities afforded graduate students for involvement, recognition and support.

Graduate courses are offered in all colleges of the University, both professional and nonprofessional. The Graduate College provides the framework through which graduate degree programs are supervised and coordinated.

The Graduate College is responsible for the review and approval of proposals for new graduate programs and for the periodic survey and evaluation of existing programs. Through its administration of scholarship, fellowship and research funds, the Graduate College encourages research and strengthening of departments. It offers extensive assistance to individual faculty members in finding the resources necessary for research projects. The Graduate College works with the departments and other colleges of the University in the formulation of policies concerning selection and in the supervision and support of graduate students.

The University of Iowa has a long history of not only promoting, but strictly adhering to the ideas of equal access to educational opportunity at the undergraduate, graduate and professional level. The Graduate College, in cooperation with the Department of Special Student Services, is involved in an extensive outreach effort to identify and attract The University of Iowa persons from minority, low-income and culturally or society distinct backgrounds.

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 degrees, Master of Fine Arts, Educational Specialist and Master of Social Work; and the Doctor of Philosophy and Doctor of Musical Arts degrees.

The Graduate College currently confers degrees in the following major fields:

- Accounting — M.A.
- Afro-American Studies — M.A.
- American Studies — M.A., Ph.D.
- Anthropology — M.A., Ph.D.
- Applicable Mathematics — M.S., Ph.D.
- Art — M.A., M.F.A.
- Astronomy — M.S.
- Biochemistry — B.S., Ph.D.
- Biology — M.S., Ph.D.
- Botany — M.S., Ph.D.
- Business Administration — M.A., M.B.A., Ph.D.
- Business Education — M.A., Ph.D.
- Chemical and Materials Engineering — M.S., Ph.D.
- Chemical Physics — M.S., Ph.D.
- Chemistry — M.S., Ph.D.
- Chinese Language and Literature — M.A., M.S., Ph.D.
- Clinical Psychology — M.A., M.S., Ph.D.
- Comparative Literature — M.A., Ph.D.
- Computer Science — M.S., Ph.D.
- Counseling, Guidance and Counseling — M.A., M.S.
- Criminology — M.A., M.S.
- Economics — M.A., Ph.D.
- Education — M.A., M.A.T., M.S., Ed.M., Ph.D.
- Electrical Engineering — M.S., Ph.D.
- Environmental Engineering — M.S., Ph.D.
- English — M.A., M.F.A., Ph.D.
- French — M.A., Ph.D.
- German — M.A., Ph.D.
- Geography — M.A., M.S., Ph.D.
- Germanic — M.A., Ph.D.
- Home Economics — M.A., M.B.
- Hospital and Health Administration — M.A., Ph.D.
- Industrial and Employment Engineering — M.S., Ph.D.
- International Business — M.A., M.S.
- Latin — M.A., M.S.
Research Resources
The many and diverse research activities of the University are centrally administered by the Office of the Vice-President for Educational Development and Research, which has an interlocking relationship with the Graduate College. For further information on the research resources of the University, see "Research Activities."

Financial Assistance
Approximately half of the University's graduate students receive some form of University-administered financial assistance. Eligibility requirements and application procedures are as 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 $4,400 and $4,900 for half-time assistantships; assistants are also eligible for tuition scholarships; nonresident assistants (one-quarter time or more) tuition and fees are reduced to residents rates.

University Teaching-Research Fellowships
For first-year graduate students entering doctoral programs; typical stipend of $5,800 a year on a year-round basis, for as many as four years; recipients have teaching and research assignments, but may carry full course loads at the same time; one year out of four and all summer, recipients have full time to pursue Ph.D. research or writing.

Scholarships
Up to 150 tuition and fees.

Graduate Fellowships
$4,000 for the academic year.

Other Sources
University and National/Defense student loans are available through the University's Office of Student Financial Aid.

Many departments offer additional support through fellowships, 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 outside 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 Graduate student body's representative organization. Representatives are elected annually from each department of the University having a graduate degree program. The Senate's primary purpose is to serve the interests of the graduate student body in matters affecting its welfare. The Senate advises the Graduate Dean on matters pertaining to the Graduate College.

Rules and Regulations of the Graduate College

The Academic Program

Section I. Admission to the Graduate College

A. Application Procedure
All students seeking to register for the first time in the Graduate College of The University of Iowa must secure a formal admission statement from the director of admissions. Applicants may obtain the proper forms from the Director of Admissions. The University of Iowa, Iowa City, Iowa 52242.

In addition to these forms, the official transcripts from each undergraduate and graduate institution attended must be submitted to the director of admissions by the designated deadline prior to the season in which admission is expected. Admission requirements must arrive no later than July 15 for first-semester enrollment, December 1 for second-semester enrollment or May 1 for summer-session enrollment. These are general Graduate College deadlines. Individual departments may establish earlier admission cutoff dates.

B. Graduate Record Examination
All applicants prior to qualification 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 year of application. 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 level of performance on this test and its weight in the decision on admission of a student is left to the departments. Some departments in fields where GRE Advanced Tests are
available require those in addition to the Aptitude Test. Inquiries about the Aptitude Test will 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), Aus-

tralia, 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 un-

finished degree programs of other univer-

sities 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 depart-

ments of those students barely passing the TOEFL test. Individual depart-

ments may require such students to take and pass a course at The University of Iowa in English usage designed especially for foreign students.

D. Early Admission
A student who is within four semester hours of having satisfied all the requirements for the bachelor's degree at The University of Iowa or any other accredited college may be given provisional admission.

E. Candidacy
Admission to the Graduate College is not the equivalent of acceptance as a candidate for an advanced degree, which must be earned through work successfully completed at The University of Iowa. (See "Section X. Master's Degrees," and "Section XII. Doctor's Degrees.")

F. Declaration of Major and Degree
Every applicant for admission must indicate on the application form the department or degree program or certificate program of his or her major interest and the degree, certificate or professional objective he or she intends to pursue. The only exceptions to this regulation are the limited number of applicants registered as "special students." (See definition of "special status" in next paragraph.) Changes in the major or degree status may be made in the course of a student's graduate study with the approval of the department to which the transfer is proposed. To initiate such action the student must file a change of major or degree status in the Office of Admissions.

G. Status upon Admission
All students upon admission fall into one of the following categories:

1. Regular—Students who have met the minimum requirements for admission and who have been accepted by a department, or interdepartmental degree program, for work leading to a graduate degree or certificate or 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 graduate work before being admitted to regular status. To be admitted on a conditional basis, the student must be recommended by a department, which will assume responsibility for advising him or her. (See minimum grade-point require-

ments, "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 3.50 and acceptance by the major department, or be dismissed.

3. Special—Student 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 2.3 is required for admission to conditional 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 on the undergraduate and graduate work completed. In cases in which a student applying for admission has a grade-point average below the minimum required, but has a Graduate Record Examination score above a point to be designated by the Graduate Dean, his or her papers shall be forwarded to the department concerned for examination and decision.

Students applying for admission to a doctoral program with 12 or more semester hours of graduate work must meet the minimum of GPA of 3.0 on the graduate work. Students with 12 or more semester hours of graduate work, a minimum of 2.7 is required on the entire record of college work. Departments, or committees in charge of interdepartmental degree programs, may, and often do, set higher minimum admission requirements than those set forth above for students doing research or serving on dissertation committees. The department concerned may be contacted directly from the dean of the college concerned.

For State Board of Regents format admission requirements, see "Appendix" of the Catalog.

I. Admission of Faculty Members to Graduate Study
Persons who hold faculty rank of assistant professor (including consultant assistant profes-

sor) or above at The University of Iowa may be admitted as special students. (See "Section G" below.) 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 16 semester hours. The apportion to the calculation of academic load only. Graduate credit is not given for courses numbered under 100. The maximum for the eight-week summer session is eight semester hours, or nine semester hours if two or more semester hours of under- graduate 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-fifth-time appointments 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 credit in the Schedule of Courses as carrying no semester hours.

C. Changes in Announced Credit
Graduate students may 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 not more than 12 semester hours during a semester or six semester hours during the eight-week summer session.
2. Preeights-eight appointees may register for not more than 10 semester hours during a semester or five semester hours during the eight-week summer session.
3. Three-thirty-third-three-quarter-time appointees may register for not more than nine semester hours during a semester or five semester hours during the eight-week summer session.
4. Seven-eighteighths-time appointees may register for not more than seven semester hours during a semester or four semester hours during the eight-week summer session.
5. Full-time appointees, including full-time instructors, may register for not more than six semester hours during a semester of three semester hours during the eight-week summer session.

E. Retroactive Registration
No form of retroactive registration is permitted.

F. Registration for Part of a Semester
A graduate student may register at any time during the semester in 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 prior 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 accorded for residence credit under the following circumstances:

1. Traveling Scholar program of the Committee on Institutional Cooperation (see "Section III.").
2. Residence credit for approved locations under the direction of members of the graduate faculty at the University of Iowa.
3. Field work as part of a regularly scheduled course or research program.
4. Courses taught off campus by members of the graduate faculty (see "Section X.D."") and "Section X.C.
5. Residence credit from another Iowa Regents' University (see "Section V.F.").
6. As many as six 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 to 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.

Extramural Fees and Privileges

1. Students required for extramural courses to graduate residence credit must apply for admission to regular status (see "Section I.D.") and pay established fees. (See "Section XII.A.") for special fees applicable to post-university registration, which should not be confused with extramural registration for residence credit.)

2. Correspondence Courses

Correspondence study credits do not count as residence credits. Graduate correspondence study credit earned prior to a student's acceptance as a degree candidate at The University of Iowa may be counted toward an advanced degree upon the approval of the appropriate college or department. Not more than nine semester hours of graduate correspondence work may be accepted for credit for an advanced degree. Summer credit must be acceptable for the master's Plan of Study and must be earned after the student has attained graduate status. A student enrolled for correspondence residence credit may not register for correspondence courses without the ap-
proved the execution 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 carrying 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 adviser, the dean of the Graduate College may grant permission to graduate students to audit courses for no credit. Auditing is permitted only to a student who is currently registered.

L. Dropping of Courses

At graduate students who drop courses after the deadline date established by the dean of the Graduate College for each semester and published by the registrar shall receive the grade of 'F' unless the entire registration is canceled. This regulation may be waived only by the graduate dean on the recommendation of the student's 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 first must be recommended by his or her own graduate adviser, who will approach an appropriate faculty member at the possible host institution in regard to a visiting arrangement.

2. After agreement by the student's adviser and the faculty member at the host institution, graduate deans at both institutions will be fully informed by the adviser and have the power to approve or disapprove.

3. A CIC Traveling Scholar will be registered at the home university, and fees will be collected and kept by that institution.

4. Credit for the work taken will be recorded at the home university.

5. Those desiring additional information should inquire at the office of the Graduate College.

C. Conditions

CIC Traveling Scholars will normally be limited to two semesters or three quarters on another campus. Each university retains its full right to accept or reject any student who wishes to study under its auspices.

Section IV. Academic Standing, Probation and Dismissal

A. Master's, Specialist, Certificate, or Other Nondegree 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 The 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 3.00. If, after completing eight more semester hours of graduate work at The University, the student's cumulative grade-point average remains below such required level, the student shall be dropped from the program and denied permission to register unless he or she applies and is accepted for another degree or certificate program. If the condition of probation is met, the student is returned to good standing.

C. Restriction on Students on Probation

A student on probation shall not be permitted to take comprehensive or final examinations leading to any degree or certificate, nor may the student receive any graduate degree or certificate.

D. Departmental Regulations and Dismissal of Information

In addition to the above University-wide requirements, departments may establish further requirements which then determine the individual student's standing with regard to probation and dismissal. To that end, each department or program shall compile a written list of standards and procedures for work in that area. These documents shall be on file in each departmental office and the office of the graduate dean. Copies are to be available for students in the departmental office, and departments shall make all reasonable efforts to inform students. Subsequent changes in standards or procedures shall be communicated to 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 forms of evaluation. Departmental policies with regard to awarding and renewing assistantships, time limits 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 E following), and such other matters as are appropriate. The nature of the departmental assistance shall be explained to the incoming students.

E. 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 way(s) the student is failing to meet the standards. The student shall be provided a reasonable amount of time to meet the standards prior to departmental dismissal. If, in its monitoring of a student's progress, conditions such as
conditional admission or probation are imposed, the department shall give all the time of its imposition and written explanation of this status and its time limits.

A student who will not be permitted to register for failure to meet standards shall be notified of this fact in writing with reasons for the action provided. Such dismissal may fail to meet conditions of admission, conditions of probation, preannounced departmental grade-point requirement or other standards, or failure of a regularly scheduled examination or formal evaluation. If a student judges the dismissal decision improper, the student has a right to review. Each department shall establish procedures for handling such reviews. The procedures are to be approved by the Graduate Dean, and shall afford a fair and expedient review. A description of these procedures shall be included in the departmental regulations described above. (See "Section IV.D.")

F. Graduate College Review of Departmental Dismissal

Questions involving judgment of performance will not be reviewed beyond the department level. If, however, the student feels there has been unfairness or some procedural irregularity concerning dismissal, the student may request a review by the Graduate College. This review may only be requested once, in writing, and the student must present a case to the department committee. If the student is not satisfied with the department’s decision, the student may appeal to the Graduate College.

Section V. Credit

A. Transfer of Graduate Credit

Graduate work at other institutions will be entered on the student’s permanent record by the registrar and a report of this action will be sent to the student, his or her major department and the dean of the Graduate College. Credit for these courses toward an advanced degree at Iowa must have the approval of the major department and the dean of the Graduate College.

B. Residence Transfer Credit

After admission to the Graduate College, residence credit from another Iowa Regents University may be counted as residence credit in this institution, provided such work is acceptable to the student’s major department on the basis of the department’s determination of its applicability toward the degree. (See "Section X.C.") and "XII.C." for minimum semester hours required on campus for the master’s and doctor’s degrees.)

C. Reduction In Credit

For courses or seminars in independent study, thesis and research an instructor may report less credit than the number of semester hours for which a student is registered.

D. Graduate Credit for Veterans

Credit may be granted for studies pursued in war and military situations under such regulations as may be formulated by the national educational agencies and under such 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 twelve weeks receive one-half credit.
3. Students who leave within the period of ten to twelve weeks receive two-thirds credit.
4. Grade reports for the one-half and two-thirds credit periods: (a) instructors report grades only as satisfactory or unsatisfactory; (b) credit is to be assigned on the basis of total registration minus thesis and seminar; (c) courses are to be counted toward specific degree requirements only after the student returns and only then with the department’s approval.
5. Students who complete the twelfth week receive full credit.
6. Grade reports for the full credit period: (a) grades are to be reported only at the end of the semester; (b) credit is to be reported in specific courses.
7. In each instance the instructor reports the student’s credit, grade and date of cancellation. No credit is granted unless the student’s work is satisfactory at the time of leaving.
8. The amount of credit in thesis and research registration is to be reported to the registrar by individual instructors on the above basis except that less or no credit may be assigned.

Section VI. Marking System

A. Marks Carrying Advanced Degree Credit

These are A, B, C and D—satisfactory.

B. Marks Carrying No Credit for Advanced Degrees

These are D—poor, F—failed, I—incomplete, W—withdrawn without discredit. R—registered and U—inunsatisfactory.

C. Audit

R is assigned when a student registered for no credit attends as an auditor throughout the course; if the student fails to meet the instructor’s requirements to class attendance, W is assigned.

D. Incomplete

The grade of I is to be used only when a student’s work during a session cannot be completed because of illness, accident or other circumstances beyond the student’s control. In registrations for thesis, research or independent study, the S/U grades may be applied. (See next paragraph, "E.") Students who receive the mark of I must remove that mark within the first session of registration after the closing date of the session for which it is given, or also the grade becomes F, except that students with I 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 to the graduate council will be set by the graduate dean for each session and printed in the academic calendar. Courses may not be repeated to remove incompletes; removal of an I is accomplished only through the completion of the specific work for which the mark is given.

E. Thesis, Research, Readings, Independent Study and Special Projects

Grades of Send 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, that he or she receives no credit. Neither S nor U is used in computing grade-point averages. At a later
satisfactory rate of progress in completing the program for the degree. 2. Preferences will be given to candidates for the doctoral degree. 3. Recommendations for graduate scholarships may be made to the Graduate College by the appropriate department executive, director or dean. A graduate scholarship may be awarded whether or not a student holds an assistantship. The amount of scholarship for the academic year may vary, but in no case exceed the comprehensive fee assessed. Scholarships will be credited to the student’s University account.

B. Graduate College Fellowships

Fellowships are awarded by the Graduate College upon recommendation by department to students with outstanding academic records. Fellowships must be registered as full-time students. The primary purpose of the awards is to permit an advanced student to complete his or her dissertation or creative project and complete the degree. Other terms of the award will be established by the graduate dean in consultation with the Graduate Council.

C. Faculty Research Assistantships

Faculty research assistantships are awarded to qualified graduate students and serve two purposes: (a) to provide research service to professional members of the academic staff and (b) to provide apprenticeship experience for graduate students who are in training in research. Not more than 20 hours of service per week are required of a full-time assistant. Other part-time service is scaled in proportion, and a limited academic schedule is permitted (see "Graduate II.D."). Appointments are ordinarily made for the nine-month academic year, but appointments may be made for other periods of time by special arrangement. Stipends vary with the qualifications of the appointee and the amount of service rendered. Faculty research assistants appointed by the Graduate College pay their own fees. Graduate appointments are usually made by the graduate dean upon recommendation of the various departments in March of each year, although appointments may be considered at any time. Applications should be made on the form provided by the Graduate College, and should be accompanied by recommendations and/or a letter summarizing the student’s qualifications.

D. Graduate Assistantships

These assistantships serve two purposes: (a) assistance in the instructional program of the University and (b) the preparation of future college teachers. In order to achieve both aims, scholarly and superior graduate students who show exceptional promise as teachers are selected for graduate assistantships. All appointments are made by the dean of the appropriate college on recommendation of the department.

E. Eligibility for Scholarships, Fellowships and Research Assistantships

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. Fellowships will be terminated when registration and/or student status is terminated. In no instance may a student be permitted to respond to any appointment until after approval for admission to the Graduate College by the director of admissions.

F. Dismissal of Assistants

A uniform policy defining procedures to be followed in the dismissal of assistants has been approved by the Board of Regents. Copies of this policy are available in the office of the graduate dean.

G. Research Associateships and Postdoctoral Fellowships

These provide for independent research. Appointment is made by the graduate dean upon recommendation of the department.

H. Credits

No academic credit is allowed for the teaching or research service for which the student is being paid as a graduate or a faculty research assistant.

I. Loans

Graduate students requiring financial assistance may apply to 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 teaching assistants, part-time employment on research projects 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 Programs" in the foreword of the "Graduate College" section of the Catalog.

Section IX. General Requirements for Advanced Degrees

A. Application for Degree

The student must file an application for an anticipated degree with the registrar not later than 10 weeks after the start of the semester or one week after the start of the summer session in which the degree will be conferred. The student must have the application signed by his or her advisor. Failure to file the application by that date will result in postponement of graduation to a subsequent graduation.

B. Enrollment In Final Semester

The student must be enrolled during the semester 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 postcomprehensive examination described in "Section X, K," 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 in 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 degree, Master of Library Science degree, and Master of Social Work degree. The Master of Science degree, Master of Business Administration degree, Master of Arts in Teaching degree, and Master of Library Science degree require the student to be majoring in the subject area in which the student seeks the degree. The Master of Social Work degree is open to students in any major after they are admitted to the graduate school.

B. Plan of Study

The student for a master's degree must file a plan of study approved by the adviser and the departmental executive with the Graduate College within the 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 interest and subject, to the approval of the major department, may include related subjects from other departments.

D. Residence Requirement

Of the minimum of 30 semester hours required for the degree, at least 24 semester hours must be completed under the auspices of The University of Iowa. After admission to the Graduate College, various forms of extramural registration may qualify toward fulfillment of this 24-hour residence requirement (see "Section II. O. 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 session 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 adviser 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 nondisciplinary degrees in the Graduate College only when the student is registered in an appropriate joint degree program.

G. Two Master's Degrees

The granting by this University of two master's degrees simultaneously or in succession requires the satisfaction of all requirements for each degree separately, including theses, where a thesis is required for each, 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 and by the thesis committee, a final copy of the thesis must be deposited with the Graduate College not later than 10 days before graduation.

The thesis committee shall consist of at least three members of the graduate faculty and may or may not be identical with the final examination committee. (See "K. Examining Committee.")

I. Master's Degree Without Thesis

A master's degree without thesis, consisting of a final examination and a minimum 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
credit in a graduate college. This requires a minimum of 48 semester hours of graduate credit, at least 24 of which must qualify for residence credit at this University. A Master of Arts degree may be awarded while the student is working toward the Master of Fine Arts degree, but the student must meet all requirements for each degree separately, with a minimum combined total of 60 semester hours of graduate credit. For other requirements see "Section X.B. Plan of Study": "C. Major and Related Fields"; "E. Reduction of Old Credits"; "H. Master's Degree with Thesis"; "J. Final Examination"; and "K. Examining Committee." B. Specialist in Education Degree This degree is granted upon completion of a prescribed two-year postbaccalaureate program designed to assist students preparing themselves professionally in such fields as teaching, administration and supervision, and special services.

Of the minimum of 60 semester hours required for the degree, at least 24 semester hours must be completed in residence at this University of which 16 semester hours must be earned while the student is on campus within 12-month period or during two summer sessions. Twenty-eight of the 60 semester hours are prescribed in the area of specialization. The others are in cognate fields, supervised experience and elective. Four semester hours of research constitute a written report. Courses successfully completed ten or more years prior to the final examination will be evaluated by the major department in order to determine the amount of credit that shall be allowed for such work. Evaluation of such old credits will be reported to the Graduate College by the departmental executive at the time of submission of the plan of study.

Other requirements and regulations applicable to the educational specialist degree are the same as prescribed for the one-year master's degree in "Section X.B. Plan of Study": "C. Major and Related Fields"; "F. Limit on Law, Medical or Dental Courses"; "J. Final Examination"; and "K. Examining Committee." A master's degree may be earned while in residence for the educational specialist degree provided the student meets all the requirements for the master's degree in question.

C. Master of Social Work Degree The M.S.W. degree is conferred by the University upon those students who give evidence of knowledge and competence in the professional practice of social work by meeting the following requirements:

1. A minimum of 24 semester hours in residence at the University of Iowa;

2. A minimum of 52 semester hours in graduate social work, including a research requirement; and

3. A final comprehensive examination, written or oral or both, covering all work for the degree.

The requirement of 52 semester hours may be interpreted to mean that a student who can satisfy the faculty of the School that he or she has completed, in the junior or senior undergraduate years, the clear equivalent of part or parts of the graduate curriculum in social work may be permitted, upon recommendation of the faculty of the School, to qualify for the M.S.W. degree on less than 50-semester hours. In no case may a student qualify for the degree on less than 40 credit hours in graduate social work study.

The curriculum is organized into four general areas: social work practice, human growth and behavior, the social sciences and research. During the two-year graduate program, coursework is combined with field placement in a social agency or social work department. Since assignments 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 "K. Examining Committee." Section XII. Doctor's Degree A. Character of Degree The University awards two doctorates, the Doctor of Philosophy and the Doctor of Musical Arts. The doctorate is the highest degree awarded by the University. The Doctor of Musical Arts degree indicates marked excellence in research or other creative work, and superior accomplishment in the discipline. The Doctor of Musical Arts degree indicates marked excellence in performance and pedagogy.
B. Prerequisites

The candidate must present evidence of having completed a satisfactory amount of undergraduate work. It is recommended for students applying in their final year of the Bachelor of Arts degree, the candidate must 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 the University, beyond the first 24 semester hours of graduate work; this requirement can be met either by: (1) enrollment as a full-time student (nine semester hours minimum) in each of two semesters or (2) enrollment for a minimum of six semester hours in each of three semesters during which the student holds at least a one-third time assistantship or fellowship awarded 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 credit, will contain a minimum of 72 semester hours of graduate work.)

D. Plan of Study

The development of a plan of study at the doctoral level is the major 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 continue the comprehensive examination. The plan will provide a listing of all graduate courses taken which are applicable to degree and a listing of courses in progress or to be completed after the comprehensive examination.

E. Ad Hoc Interdisciplinary Programs

A student may prepare a proposal for an interdisciplinary course of study, including the plan for the comprehensive examination, under the sponsorship of at least three faculty members and the department most directly concerned, which shall be designated as the sponsoring department. Final approval of such individual programs is granted by the graduate dean, who may add members to the student's supervisory 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 ten or more years prior to the comprehensive examination will be evaluated by the major department in order to determine the amount of credit that shall be allowed for such work. Evaluation of such credits will be reported to the Graduate College by the departmental executive at the time of notification 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 doctoral degree if it is taken after the student has satisfied the requirements for a bachelor's degree at this University. The work accepted from the professional colleges must be directly related to the student's major field of study in the Graduate College, and the plan of study must be approved by the student's advisor and the major department. Work completed while registered for a professional degree in law, medicine or dentistry will not be counted as part of the one academic year which must be spent in residence as a doctoral student on the campus of the University.

H. Joint Program for Master's and Doctoral Degrees

These students who expect to continue their training through the doctoral degree may file a joint program for the master's and doctor's degrees. The master's program may be combined with the comprehensive examination for the doctorate for these candidates. The examining committee will file separate reports of its work on the final examination for the master's degree and 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 a general Graduate College requirement in foreign languages. Those students who do not 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 statement of standards and procedures (see "Section IV.C."). Departmental executive officers are responsible for reporting compliance of requirements and eligibility for entrance on the student's record.

Specifications of special 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 written not later than the session prior to the delinquency of graduation. This examination, administered only on campus, is intended to be an inclusive evaluation of the candidate's mastery of the major and related fields of study, including the tools of research in which competence has been certified. The comprehensive examination is not a degree qualifying examination. It is intended to evaluate the candidate's mastery of his or her subject at or near the end of his or her formal preparation and prior to the completion of the dissertation. The comprehensive examination and the final examination, which is concerned chiefly with defense of the thesis and related subjects, are the two principal examinations for the doctoral degree.

The comprehensive examination will be evaluated by a convened meeting of the committee and reported as satisfactory, satisfactory with reservations or unsatisfactory to the Graduate College office within 15 days after the completion of the examination. The "unsatisfactory" vote will make the committee report unsatisfactory. The report of a satisfactory examination should contain the name of the supervising professor for the candidate's dissertation.

In the event of a report with two or more votes of "unsatisfactory with reservations," the exact stipulations of the committee should be recorded in the report form. If the stipulations involve further examination in a
particular area of study, the statement should 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 case 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 with semester after completing the comprehensive examination until the degree is awarded. If a student fails to register, he or she may be readmitted to candidacy until he or she has submitted an application which has been approved by his or her adviser, 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 courses, 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 (Ph.D. postcomprehensive registration) for any semester in which the department (i.e., department chair or director of graduate studies) and the student's adviser determine that the student is neither making significant use of the University facilities (except in their 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

Acquity of the dissertation must be presented at the Office of the Graduate College no later than four weeks before the graduation date at which the degree is to be conferred and two copies deposited there in final form 10 days before graduation.

Regulations regarding preparation of the dissertation vary shall be promulgated by the Dean of the Graduate College. Dissertations will be microfilmed and must include availability of a preprint. The abstract, an appropriate method of preparing the accompanying manuscript, is required. The dissertation must be approved and signed by the dissertation advisor. The abstract is published in the Graduate College. One copy of the dissertation typewritten in bound and indexed at the University Library.

If the dissertation is in some nonprofit form (e.g., computer, slack, performance in music) the librarian in charge of theses 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 includes: (a) a critical inquiry into the purposes, methods and results of the investigation—not a mere recapitulation of the procedures followed; (2) an intensive questioning on areas of knowledge pertaining to the immediate context of the investigation.

The final examination may not be held until the second session after the student passes the comprehensive examination or until the final check of the dissertation by the Graduate College; however, a student must take the final examination no later than five years after passing the comprehensive examination. Failure to meet this deadline will result in a reexamination of the student to determine his or her qualifications for taking the final examination. The procedures to be followed are the same as those for the comprehensive examination. (See "XII.2. 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 chair, to participate in the examination.

The report of this final examination is due in the Graduate College office not later than 48 hours after the date of the examination. The final examination will be evaluated as satisfactory or unsatisfactory. 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 session. 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.

Section XII Exceptions

Permits 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.
College of Law

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 Curriculum

Iowa’s law program is distinctive in its first-year approach. There is a freshman seminar in which small groups of students have opportunities for new individual expression, closer faculty relationships, the writing of several research papers and a closer approach in graduate-level instruction.

Each first-year course has a specified 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 torts and a course in appellate advocacy. Before they graduate, all must also take a second course in constitutional law. All other second- and third-year courses are elective.

Each student will be required to complete five units of research and writing in addition to the first-year writing program. This requirement can be satisfied through any combination of courses and activities which carry writing credit, including seminar papers, independent research projects, Iowa Law Review and participation in the appellate advocacy and clinical counseling programs.

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.

Applicants to the College of Law should be advised that receiving a law degree does not alone qualify one for many professional positions. The supreme court of each jurisdiction administers a bar examination, successful completion of which is a condition of practicing in their courts.

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 required at 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 one discipline with the expertise 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 during the summers is the same in kind and amount as that given in the corresponding subjects in the regular term, and the admission requirements 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:

Dean: K. William Hines
Dean emeritus: Ronald E. Hixson
Associate dean: Vern E. Shrader
Adjunct dean: Gregory R. Williams, Thomas C. Hennick
Law school professors: Michael Francis, John Kirby, James E. Minde, Peter B. Haubrock, Charles A. Talkington, Jr., Mark E. Schulten, Gary A. Stip, Daniel B. Veneman
Law school professors emeriti: Richard L. Thompson, John F. O’Kane, Howard D. Zirkel, Jesse S. Mathewson
Assistant professors: Howard A. Miller, David Kadar, Harry D. Metzger, Stephen L. Dow, George W. Whipple, Larry S. Wend
Assistant professor emeritus: Barbara Schwartz
Instructor: Anne Saline, John Thompson
Degree offered: J.D.
Scholastic Requirements
Numerical grades may be translated into letter grades for purposes of comparison as follows:
100-95=A, 94-80=B+, 79-75=B, 74-70=C, 69-65=D, 59-60=F.
A first-year student who fails to maintain a cumulative average of 66 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 average of 65 to be eligible to continue in the College.

Graduation Honors
The J.D. degree may be granted with special honors as follows: With Highest Distinction—cumulative average of 85 or more; With High Distinction—cumulative average of 80-84; With Distinction—cumulative 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. The Journal’s editorial board is selected from students exhibiting superior writing ability.

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.

Legal Clinic Program
Students who have completed one-half of the work toward their J.D. degrees are eligible to participate in the Legal Clinic Program, which offers four basic kinds of opportunities for students to apply their theoretical knowledge to real cases under the supervision of faculty members and other attorneys. Students in the Legal Aid Clinics represent indigents in several areas of law; students in the Prisoner Assistance Clinics represent inmates at state penal institutions in both habeas corpus and civil cases. Both Legal Aid and Prisoner Assistance Clinics participate fully in interviewing, fact investigation, negotiation, and courtroom proceedings.

Students in the Mock Trial Program act as law clerks to trial judges. As such, they observe court proceedings and draft briefs, opinions, and jury instructions.

Firstly, students in the Legislative Internship Program are assigned to work as legal assistants to state legislators.

In addition to these programs carrying academic credit, the College of Law participates each summer in the County Attorney Internship Program, through which students work full time for county attorneys throughout the state.

Appellate Advocacy
Provide each student with extensive training, research, analysis, and oral argument; includes competitions to determine which students shall represent the College of Law in the Regional and National Mock Court Competitions, the Jessup International Moot Court Competition and the Wagner Labor Law Competition.

Client Counseling Program
Provides students an opportunity to develop interviewing and counseling skills through simulated client interviews. Includes an intramural phase and tournament competition to determine College of Law representatives to the American Bar Association-sponsored regional competition. Administered by a board of third-year students who have distinguished themselves in the program the previous year.

Center for World Order Studies
The Center for World Order Studies (a project of The Stanley Foundation of Muscatine, Iowa) was established in June 1972 at the University of Iowa as a Midwest center for education and research in the causes of and potential courses for existing and future world order problems, particularly those related to the use of military power across national boundaries. In cooperation with public and private schools, colleges and universities, and civic and business organizations throughout the country and especially in the Iowa-Illinois area, the major function of the Center is to promote increased understanding of these world order problems through research, revision, teacher training, conference and workshop, simulation exercises, coffee seminars, publications, media activities, essay contests, debates, and other learning techniques.

Student Organizations
Law student organizations at Iowa include the Order of the Coif, a national honorary society whose membership is drawn from the top 10 percent of the senior class; the Iowa Society of International Law; Phi Delta Phi and Phi Alpha Delta, national law fraternities; and the Black American Law Students Association, the Civicano Association for Legal Education, the Organization of Women Law Students and Staff, the Law Student Division of the American Bar Association, the National Lawyers Guild, the Environmental Law Society, and the Iowa Student Bar Association, whose functions include placing students on faculty committees.
Facilities

The Law Building contains a library and air-conditioned classrooms. The law collection of approximately 50,000 bound volumes, the Law Library, is an outstanding research facility. A broad open-plan policy makes it readily available to students.

Fees and Expenses

In addition to regular tuition and fees, books and supplies average about $320 per year. Housing costs and personal expenses will vary with individual circumstances.

Financial Aid

The College requires all students to enroll for a full schedule and discourages them from taking outside employment during the first year. It has developed a comprehensive financial aid program which enables most students to meet expenses without outside employment. In addition to the awards listed in the "Scholarships and Loans" section of the Catalog, the College offers research assistantships with substantial awards. Assistantships are awarded to high-ranking upperclass students 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 law. Each year numerous law firms, corporations and government agencies visit the University to recruit students from the College of Law.

Admission

Prelaw Studies

No prescribed program of undergraduate study is required for admission to the College of Law. This is true also of the College of Education and other Graduate Schools. However, the objectives of the program should include increased ability 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 term he or she wishes to enter. The applicant must present a baccalaureate degree from an approved college or university before beginning work in the College of Law. The College of Law must have received, by the deadline date, the applicant's Law School Data Assembly Service report and Law School Admission Test score. The applicant is responsible for having all of his or her college transcripts sent to the Law School Data Assembly Service, located in Princeton, New Jersey. The Law School Admission Test is administered by the Educational Testing Service, also located in Princeton.

A $10 application fee must accompany applications from prospective students not completing their undergraduate study in residence at the University of Iowa.

Information of the specific requirements for admission listed above does not assure admission to the College of Law. From applicants meeting the minimum requirements, the admissions committee of the College will select those whom it deems 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 completed a school which is a member of the Association of American Law Schools. 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 from which he 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 a $20 deposit by April 1, and within this time limits after being notified of their acceptance, if that occurs after April 1. An applicant who fails to make the deposit within the specified time forfeits his or her place in the entering class. Those who enroll receive credit for the deposit on their first University bill. The deposit is refunded only to an applicant who cannot enroll because of circumstances beyond his or her control.

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

81:18 Civil Procedure

3-5 hrs. This course is designed for law students with practical experience in the judicial process. Emphasis will be on the procedures of the court and the practical nature of litigation. Topics covered include discovery, written and oral examination, voir dire, the jury system, and the procedures of the court. The course is designed to give students an understanding of the judicial process and to develop their legal analytical ability.

81:18 Constitutional Law

3-5 hrs. Basic course in the American constitutional system. The course is designed to give students an understanding of the judicial process and to develop their legal analytical ability.

81:18 Environmental Law

3-5 hrs. This course is designed for law students with practical experience in the judicial process. Emphasis will be on the procedures of the court and the practical nature of litigation. Topics covered include discovery, written and oral examination, voir dire, the jury system, and the procedures of the court. The course is designed to give students an understanding of the judicial process and to develop their legal analytical ability.

81:18 Contracts and Sales

3-5 hrs. This course is designed for law students with practical experience in the judicial process. Emphasis will be on the procedures of the court and the practical nature of litigation. Topics covered include discovery, written and oral examination, voir dire, the jury system, and the procedures of the court. The course is designed to give students an understanding of the judicial process and to develop their legal analytical ability.

81:18 Restitution

3-5 hrs. This course is designed for law students with practical experience in the judicial process. Emphasis will be on the procedures of the court and the practical nature of litigation. Topics covered include discovery, written and oral examination, voir dire, the jury system, and the procedures of the court. The course is designed to give students an understanding of the judicial process and to develop their legal analytical ability.

81:18 Criminal Law

3-5 hrs. This course is designed for law students with practical experience in the judicial process. Emphasis will be on the procedures of the court and the practical nature of litigation. Topics covered include discovery, written and oral examination, voir dire, the jury system, and the procedures of the court. The course is designed to give students an understanding of the judicial process and to develop their legal analytical ability.

81:18 Torts

3-5 hrs. This course is designed for law students with practical experience in the judicial process. Emphasis will be on the procedures of the court and the practical nature of litigation. Topics covered include discovery, written and oral examination, voir dire, the jury system, and the procedures of the court. The course is designed to give students an understanding of the judicial process and to develop their legal analytical ability.

81:18 Property

3-5 hrs. This course is designed for law students with practical experience in the judicial process. Emphasis will be on the procedures of the court and the practical nature of litigation. Topics covered include discovery, written and oral examination, voir dire, the jury system, and the procedures of the court. The course is designed to give students an understanding of the judicial process and to develop their legal analytical ability.

81:18 International Law

3-5 hrs. This course is designed for law students with practical experience in the judicial process. Emphasis will be on the procedures of the court and the practical nature of litigation. Topics covered include discovery, written and oral examination, voir dire, the jury system, and the procedures of the court. The course is designed to give students an understanding of the judicial process and to develop their legal analytical ability.

81:18 Civil Rights

3-5 hrs. This course is designed for law students with practical experience in the judicial process. Emphasis will be on the procedures of the court and the practical nature of litigation. Topics covered include discovery, written and oral examination, voir dire, the jury system, and the procedures of the court. The course is designed to give students an understanding of the judicial process and to develop their legal analytical ability.

81:18 Family Law

3-5 hrs. This course is designed for law students with practical experience in the judicial process. Emphasis will be on the procedures of the court and the practical nature of litigation. Topics covered include discovery, written and oral examination, voir dire, the jury system, and the procedures of the court. The course is designed to give students an understanding of the judicial process and to develop their legal analytical ability.
91.384 State and Local Government 3 h. a.
Legal status of and relationship between legislative, executive, and judicial branches of state and local bodies of government; constitutional limitations; a. established and amended by act of legislature; b. functions of state and local government; c. constitutional validity of acts and amendments; d. case studies.

91.385 Trustees of Grinnell College 3 h. a.
Covers the roles, responsibilities, and authorities of trustees of a private college; how the board makes decisions; how the board interacts with the president and other administrative staff; and how the board's decisions impact the college.

91.386 Historical Narrative 2 h. a.
Historical narrative of the university's foundation and growth, focusing on key events, leaders, and developments.

91.387 Expanded Law 2 h. b.
Expands the scope of legal practice to include areas such as corporate law, intellectual property, and international law.

91.388 Labor Law 3 h. a.
Covers the fundamentals of labor law, including collective bargaining, unfair labor practices, and the rights and responsibilities of employees and employers.

91.389 Real Estate Law 3 h. a.
Focuses on the legal aspects of buying, selling, and owning real estate, including contracts, deeds, mortgages, and taxes.

91.390 Environmental Law 3 h. a.
Examines the legal framework governing pollution, waste management, and natural resources conservation.

91.391 Tax Law 3 h. a.
Covers federal, state, and local taxation, including income, property, and corporate taxes.

91.392 Health Law 3 h. a.
Examines the legal issues surrounding healthcare, including healthcare reform, patient rights, and medical malpractice.

91.393 Immigration Law 3 h. a.
Focuses on immigration law, including visas, asylum, and naturalization.

91.394 Estate Planning 3 h. a.
Covers estate planning, including wills, trusts, and estate administration.

91.401 Criminal Procedure 3 h. a.
Covers the criminal justice system, including侦查, indictment, arraignment, trial, and appeal.

91.402 International Law 3 h. a.
Focuses on international relations, including international organizations, treaties, and conflicts.

91.403 Intellectual Property Law 3 h. a.
Covers copyright, trademark, and patent law, including the creation, protection, and enforcement of intellectual property rights.

91.404 Professional Responsibility 3 h. a.
Examines the ethical and professional standards for lawyers, including conflicts of interest, advertising, and client confidentiality.

91.405 Environmental Law 3 h. a.
Covers the legal framework governing pollution, waste management, and natural resources conservation.

91.406 International Law 3 h. a.
Focuses on international relations, including international organizations, treaties, and conflicts.

91.407 Tax Law 3 h. a.
Covers federal, state, and local taxation, including income, property, and corporate taxes.

91.408 Estate Planning 3 h. a.
Covers estate planning, including wills, trusts, and estate administration.

91.409 Criminal Procedure 3 h. a.
Covers the criminal justice system, including侦查, indictment, arraignment, trial, and appeal.
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. Faculty members provide undergraduate and graduate instruction in anatomy, biochemistry, microbiology, pharmacology, physiology and biophysics, hospital and health administration, pathology, obstetrics and gynecology, preventive medicine, environmental health, and radiation biology. Each year, 1,500 student medical students are granted clinical privileges. Many of them from the three areas of the College of Liberal Arts.

The College of Medicine is responsible for the education of physician's assistants, medical technologies, physical therapists, and nuclear medicine technologies, and it carries out a year-around program of continuing medical education, in which several thousand practicing physicians upgrade their knowledge and skills through "sabbaticals," short courses, and conferences each year.

Beyond its academic responsibilities as the only medical college in Iowa, offering work toward the M.D. degree, the College of Medicine is concerned with initial public issues of distribution and organization of health care services. Medical faculty members advise and serve as members of state and regional health planning boards, health boards, and various health agencies; some faculty also take part in the University's Health Services Research Center.

To provide opportunity for young physicians to experience the satisfactions of providing primary care in a community setting, undergraduate medical students have several opportunities to gain first-hand experience in physicians' offices and community hospitals. For graduate students, a statewide system of family practice residency programs provides concentrated opportunity to learn this 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 care at all levels.

Accredited by the American Medical Association and the Association of American Medical Colleges, the College of Medicine meets the requirements of all state licensing boards. Its diploma admits the today to all privileges granted to graduates of all medical colleges before such boards. All other professional programs administered by the College of Medicine are accredited by their respective accrediting bodies.

The M.D. Program

The Doctor of Medicine program at Iowa differs in several significant ways from the traditional format of medical education. Its two-year introductory phase consists of three semesters of basic medical science and one semester of progressive orientation in clinical medicine. The third year consists of a summer session and two semesters of clinical clerkships. In which the student participates in patient care under supervision of staff physicians. The fourth year is devoted to an Intensive Study Program in which the student focuses on whatever aspect 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. The candidate must have at least one year at The University of Iowa, must have attained a passing grade in each of the courses, and must have satisfied all other requirements of the College.

Medical Scientist Training Program

The Medical Scientist Training Program is an interdepartmental program of the College of Medicine and the Graduate College designed to enable individuals for careers in medical science and academic medicine with emphasis on research and teaching. With support from the National Institutes of Health, the Program provides an integration of the requirements of the research training in
Combined M.D.-Master's Degree Programs

Students who want to pursue the M.D. degree in combination with an M.A. or M.S. 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 chair 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 sciences, and radiation biology. In addition, graduate degree programs leading to the Master of Science degree are offered in ophthalmology, otolaryngology, and pathology.

Faculty

All faculty members are full-time, their work in practice and research being part of—not apart 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.

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 S15-member clinical staff for University Hospitals and Clinics, whose 15 clinical services are directed by heads of its 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 serves as a tertiary care center for the State of Iowa and ports of adjoining states, with most patients being referred for care and treatment not readily available in their home communities. Some 40,000 patients are admitted to the University Hospitals complex each year, while 51 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 educators and media specialists who serve the faculty, staff, and administration. The Unit has three major charges: to provide educational consultation, to initiate and cooperate in educational research endeavors, and to coordinate teacher education activities.

Financial Aid

Loans are available to medical students on the basis of their need, and to the extent that loan funds are available. Most of these loans come from the United States Public Health Service's Health Professions Student Loan Program. 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 $1,000.

Annual summer research fellowships with a stipend of $1,000 are awarded on the recommendation of the sponsoring faculty members.

Educational Opportunities Program

The Educational Opportunities Program provides financial and academic assistance to educationally disadvantaged students from groups underrepresented in American medicine.

Admission to the M.D. Program

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 $80 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 applicant 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 undergraduate institution.

Prospective students must have earned at least 94 semester hours of credit, or the equivalent, including the following:

- Physiology: a complete introductory course.
- Mathematics: college algebra and trigonometry, or advanced college mathematics for applicants who completed college algebra and trigonometry in high school.
- Chemistry: as a minimum, a complete introductory course in organic chemistry,
admission for the professional program in Physical Therapy and the baccalaureate degree program for Physician's Assistants, Medical Technologies and Nuclear Medical Technologists follow the selection described in their respective sections of this catalog.

Nondepartmental Courses

0.5.1 Medicine Elective Fourth Year

0.5.2 Medicine Clinical Third Year

0.5.3 Nutrition 1.0 h.

0.5.4 Preventive Health 2.0 h.

0.5.5 Law and Medicine for Physician's Assistants 1.0 h.

3.5.6 Neurology and Behavior 2.0 h.

3.5.7 Neurology and Behavior Interdisciplinary study of elements, organization, and function of central nervous system. Same as 60.110.

3.5.8 Introduction to Clinical Medicine 2.0 h.

4.5.9 Introduction to Emergency Medicine 2.0 h.

4.5.10 Introduction to Cardiovascular Medicine 2.0 h.

5.5.11 Diagnosis Learning Programs for Patient's Care 3.0 h.

5.5.12 Biostatistics 2.0 h.

5.5.13 Advanced Biomedical Studies 2.0 h.

5.5.14 Advanced Biomedical Studies 2.0 h.

5.5.15 Biostatistics Seminar 1.0 h.

5.5.16 Biostatistics Seminar 1.0 h.

5.5.17 Clinical Rotations 2.0 h.

5.5.18 Clinical Rotations 2.0 h.

5.5.19 Clinical Rotations 2.0 h.

5.5.20 Clinical Rotations 2.0 h.

5.5.21 Clinical Rotations 2.0 h.

5.5.22 Clinical Rotations 2.0 h.

5.5.23 Clinical Rotations 2.0 h.

5.5.24 Clinical Rotations 2.0 h.

5.5.25 Clinical Rotations 2.0 h.

5.5.26 Clinical Rotations 2.0 h.
Instructing Students of the Health Care Professions

The Department contributes to the practical education of health care professionals by providing courses in gross anatomy, microscopic anatomy, and neuroanatomy for medical and dental students, gross anatomy and neuroanatomy for physical therapy students, general anatomy and microscopy for dental hygiene students, and general anatomy and microscopy for Physician's Assistants, nursing and pharmacy students. In most of these courses, the students learn about the structure of the human body mainly by working in teaching laboratories—dissecting, examining specimens with a microscope and studying specially developed learning materials. Innovative approaches to the study of anatomy, such as the use of programmed texts, videotapes and projection slide programs, have been developed by the faculty.

Graduate Study

The main goal of the graduate program is to prepare students for careers in teaching and research. Job opportunities primarily in medical colleges, are excellent for anatomy Ph.D.s. Consequently, the graduate program emphasizes the training of Ph.D.'s. The M.S. degree is offered only to students in health science programs who take 34 credits from their practical student to acquire experience in teaching and research. The M.S. is awarded on the basis of satisfactory completion of coursework in each of the major subdisciplines of anatomy—gross anatomy, microscopic anatomy and neuroanatomy. Teaching experience in one of these areas is a thesis based upon an experimental study, and a successful oral defense of the thesis.

All students in the Ph.D. program acquire in-depth knowledge of gross, microscopic, and neuromuscular by taking courses and teaching in each of them. Since most students who complete the Ph.D. program will find positions in which teaching constitutes a significant part of their responsibilities, the Department gives this special consideration. During the last year in the program, a student chooses a research area and becomes affiliated with a faculty member whose research is in that area. Research strength is currently found in endocrinology and reproduction, neurology, and cell and molecular biology. Early in the second year, the student takes a comprehensive examination assessing his or her ability to analyze, organize and study the information, concepts and skills acquired in the first two years of the program.

The final examination for the Ph.D. candidate is a critical evaluation of his or her research capability. It consists of a written thesis and an oral thesis defense. The thesis is based on original experimental study done with the guidance of the faculty adviser and at least four other faculty members.

Admission

Admission to the graduate program follows general Graduate College requirements. Admissions to the Ph.D. program is strongly encouraged (see Graduate College). An applicant's undergraduate background should include advanced mathematics, one year of organic chemistry, at least two biology courses and one year of general physics. Applicants are considered for admission on a competitive basis, taking into account each applicant's record, performance on the Graduate Record Examination, Aptitude and Advanced Tests, letters of recommendation and expressed career objectives. The appropriate departmental application form is required. Applicants are encouraged to take the GRE Advanced Test in Biology.

Financial Support

Financial support is available to some students selected for the Ph.D. program. To be considered for financial aid, applications should be completed by February 15.

Facilities

The Department occupies new quarters (over 35,000 square feet) in the Basic Medical Sciences Building on the Health Sciences campus. These quarters house modern telescopes and well-equipped research laboratories. The most modern instrumentation is available, including four high-resolution electron microscopes, Balzer evaporation unit, spectrophotometer, cryostat, an automated gamma counting system, etc. Research is increasingly

Department of Anatomy

Department head: T.H. Williams

Graduate program: M.S., Ph.D.

The Department performs three main functions: teaching anatomy of the human body to students preparing for careers in the health care professions; providing advanced courses, teaching experience and research training to graduate students preparing for careers in teaching and research; and conducting original research into biological structure and function-structure-function relationship.
Courses

06.115 Embryology/Histology
Lecture and laboratory demonstrations on human anatomy and histology for students of nursing and dental hygiene.

06.116 Human Microanatomy
Lecture and laboratory demonstrations of cell, tissue, and organ anatomy and histology for students of nursing and dental hygiene.

06.121 Gross Human Anatomy for Dental Students
Regional dissection, lectures and demonstrations with emphasis on head and neck regions. Open to graduate students with consent of instructor. Spring.

06.122 Principles of Human Anatomy
Lecture and laboratory demonstrations with emphasis on gross and microscopic anatomy. Open to graduate students with consent of instructor. Winter.

06.123 Gross Human Anatomy for Medical Students
Regional dissection, lecture and demonstrations with emphasis on gross anatomy of the head and neck regions. Open to graduate students with consent of instructor. Winter.

06.124 Gross Human Anatomy for Medical Students
Regional dissection, lecture and demonstrations with emphasis on gross anatomy of the head and neck regions. Open to graduate students with consent of instructor. Winter.

06.125 Human Anatomy
Regional dissection, lectures and demonstrations with emphasis on clinical anatomy. Open to graduate students with consent of instructor. Winter.

06.126 Human Anatomy and Neuroanatomy
Regional dissection of head and neck. Histology and microscopic anatomy. Open to graduate students with consent of instructor. Winter.

06.127 Human Anatomy and Histology
Dissection of head and neck. Histology and microscopic anatomy. Open to graduate students with consent of instructor. Winter.

06.128 Human Anatomy and Neuroanatomy
Regional dissection of head and neck. Histology and microscopic anatomy. Open to graduate students with consent of instructor. Winter.

06.129 Human Anatomy and Histology
Dissection of head and neck. Histology and microscopic anatomy. Open to graduate students with consent of instructor. Winter.

06.130 Human Anatomy
Regional dissection, lectures and demonstrations with emphasis on clinical anatomy. Open to graduate students with consent of instructor. Winter.

06.131 Gross Human Anatomy for Dental Students
Regional dissection, lecture and demonstrations with emphasis on head and neck regions. Open to graduate students with consent of instructor. Winter.

06.132 Gross Human Anatomy
Regional dissection, lecture and demonstrations with emphasis on clinical anatomy. Open to graduate students with consent of instructor. Winter.

06.133 Gross Human Anatomy for Dental Students
Regional dissection, lecture and demonstrations with emphasis on head and neck regions. Open to graduate students with consent of instructor. Winter.

06.134 Human Microanatomy
Lecture and laboratory demonstrations of cell, tissue, and organ anatomy and histology for students of nursing and dental hygiene.

06.135 Embryology/Histology
Lecture and laboratory demonstrations on human anatomy and histology for students of nursing and dental hygiene.

06.136 Human Microanatomy
Lecture and laboratory demonstrations of cell, tissue, and organ anatomy and histology for students of nursing and dental hygiene.

06.137 Gross Human Anatomy for Dental Students
Regional dissection, lecture and demonstrations with emphasis on head and neck regions. Open to graduate students with consent of instructor. Winter.

06.138 Principles of Human Anatomy
Lecture and laboratory demonstrations with emphasis on gross and microscopic anatomy. Open to graduate students with consent of instructor. Winter.

06.139 Gross Human Anatomy for Medical Students
Regional dissection, lecture and demonstrations with emphasis on gross anatomy of the head and neck regions. Open to graduate students with consent of instructor. Winter.

06.140 Gross Human Anatomy for Medical Students
Regional dissection, lecture and demonstrations with emphasis on gross anatomy of the head and neck regions. Open to graduate students with consent of instructor. Winter.

06.141 Human Anatomy
Regional dissection, lectures and demonstrations with emphasis on clinical anatomy. Open to graduate students with consent of instructor. Winter.

06.142 Gross Human Anatomy for Dental Students
Regional dissection, lecture and demonstrations with emphasis on head and neck regions. Open to graduate students with consent of instructor. Winter.

06.143 Gross Human Anatomy for Medical Students
Regional dissection, lecture and demonstrations with emphasis on gross anatomy of the head and neck regions. Open to graduate students with consent of instructor. Winter.

06.144 Gross Human Anatomy
Regional dissection, lecture and demonstrations with emphasis on clinical anatomy. Open to graduate students with consent of instructor. Winter.

Anesthesia

Department head: Harold C. Stone
Faculty professors: R. Donald摄影, Senior G. V. N. D. Cohen, D. R. M. Newma, H. S. Stone
Department assistant professors: J. M. C. Carter, S. M. S. U. W. E. Stone
Department secretaries: D. M. N. D. Cohen, J. A. C. Groman, M. L. Tanaka
The Department introduces the second-year medical student to anesthesia as a specialty; helps to develop in the third-year student some concepts and technical skills related to resuscitation, airway management and the care of the obstructed patient; and offers the fourth-year student more intensive study in any and all phases of the Department. Wide clinical experiences, well-designed seminars and teaching conferences, and ongoing research activities develop in the postgraduate student, or resident, the intellectual depth and skills required of a specialist in anesthesia.

Courses


116:10 Clinical Anesthesia Seminar 4.0 a.b. Instruction and practical experience in various forms of anesthesia for surgical procedures. Basic techniques of intubation, spinal, epidural, and peripheral nerve blockade; anesthesia in infants; spinal manipulation and other anesthesia management skills. Hands-on practice of postoperative patient and obstetrician's emergency. See brochure for details.

116:11 Intensive Care 4.0 b. Evaluation and treatment of severely ill patients in Intensive Care Unit; artificial ventilation, evaluation of pulmonary function and monitoring of cardiovascular status; particular emphasis on obstetric emergency and the need for postoperative ventilatory assistance. See brochure for details.

116:13 Intensive Care Unit 3.0 a.h. Intensive Care Unit; artificial ventilation, evaluation of pulmonary function and monitoring of cardiovascular status; particular emphasis on obstetric emergency and the need for postoperative ventilatory assistance. See brochure for details.

116:98 Special Studies in Anesthesia 1.0 a. Research in well-defined project relating to anesthesia. Arrangements of study vary according to the nature of the project and the problems studied. See brochure for details.

116:99 Special Study in Anesthesia 1.0 a. Research in well-defined project relating to anesthesia. Arrangements of study vary according to the nature of the project and the problems studied. See brochure for details.

Biochemistry

Department Head: Edward C. Rugh


The Department of Biochemistry offers both master's and doctoral programs. The Department offers the master's program independently, but master's thesis are also prepared by some Ph.D. candidates. The Department also offers opportunities for qualified and interested students to pursue M.S.-M.D., or Ph.D.-M.D., or (Medical Oncology Training) combined programs.

The focus of the graduate program is on the individual student, whose educational needs are met in formal coursework and by tutorial conferences in the research areas from which he or she may choose a thesis topic.

First-year graduate students with adequate backgrounds take a general biochemistry course (99:190), physical biochemistry (99:193), an seminar on effective oral presentation (99:280), and electives. The student also spends about half of his or her time working in three different faculty laboratories (99:291), learning techniques in the context of ongoing projects.

The second-year graduate student chooses a research laboratory for his or her Ph.D. thesis research. Begins the thesis project, and takes elective courses for supplement and complement to the student's thesis preparation and development. Students are required to complete a minimum of 10 semester-hours of 1-3 credit hour mini-courses in biochemistry (chosen from the 16th) and 6 semester-hours of courses offered in other departments.

After passing the comprehensive examinations, the student is formally admitted to degree candidacy, and concentrates on thesis work. The program culminates in the completion of this work, and its successful defense before the thesis committee.

In addition to meeting these and the general requirements of the Graduate College, the student is expected to assist in the teaching of biochemistry for two or three semesters, as part of his or her training. Throughout the program, the student is associated with small seminar groups and receives individual attention from the Biochemistry faculty member who serves as his or her research adviser.

Research Interests

The Department's current research interests include several aspects of physical biochemistry, effects of manipulation and manipulation-related techniques of the cytoskeleton, muscle control mechanisms, structure and function of nucleosides, gene control in higher organisms, biochemistry of glycogenolysis and carbohydrate metabolism. See brochure for details.

The Department of Biochemistry offers both master's and doctoral programs. The Department offers the master's program independently, but master's thesis are also prepared by some Ph.D. candidates. The Department also offers opportunities for qualified and interested students to pursue M.S.-M.D., or Ph.D.-M.D., or (Medical Oncology Training) combined programs.

The focus of the graduate program is on the individual student, whose educational needs are met in formal coursework and by tutorial conferences in the research areas from which he or she may choose a thesis topic.

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After passing the comprehensive examinations, the student is formally admitted to degree candidacy, and concentrates on thesis work. The program culminates in the completion of this work, and its successful defense before the thesis committee.

In addition to meeting these and the general requirements of the Graduate College, the student is expected to assist in the teaching of biochemistry for two or three semesters, as part of his or her training. Throughout the program, the student is associated with small seminar groups and receives individual attention from the Biochemistry faculty member who serves as his or her research adviser.
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 stu-
dents with a relatively wide range of backgrounds. Students with bachelor's degrees in any of the biological, biochemical or physical sciences are encouraged to apply. Required preparation includes advanced college-level coursework in physical chemistry, biologic, physics and mathematics through calculus. Students with demonstrated ability may make up deficiencies after enrollment.

Beyond the general Graduate College admission requirements (see the Graduate College section of the Catalog), minimum requirements of the Department include an undergraduate grade-point average of 3.0 (A=4.0), with a 3.0 average in science and mathematics courses, and an acceptable score on the verbal, quantitative, and analytical sections of the Graduate Record Examination Aptitude Test.

Course Offerings
99.118 Biochemistry 3 h.s.
One-semester lecture survey focusing on chemistry and molecular biology of biochemistry and the techniques used to maintain them. Prerequisite: two semesters of general chemistry, one semester of organic chemistry.

99.120 The Chemistry of Biological Materials 3 h.s.
Chemistry of major functional groups in compounds in biological systems and factors which influence their reaction, intermolecular, intramolecular, and environmental changes. Rate of reactions, equilibria and other topics. Prerequisite: 99.121.

99.121 Molecular Genetics 3 h.s.
Molecular dynamics of biological systems; how energy is conserved, utilized and transferred by living bodies. Principles of mutation are examined and quantified. How energy of light is maintained, how equilibrium diagrams function and how processes of the light-activated reaction are integrated. Prerequisite: 99.120.

99.131 Molecular Biology and Genetics 4 h.s.
Selected methods of gene isolation, chromosomal mapping, polymerase chain reaction, and modern techniques in DNA and RNA methodology, molecular techniques and principles of molecular genetics. Prerequisite: 99.121 or consent of instructor. Same as 311.371.

99.133 Physical Biochemistry 4 h.s.
Theory and instrumentation of chemical characteristics of biological systems. Techniques of physical and chemical analysis of subcellular structures. Prerequisite: 99.121 or consent of instructor. Same as 311.371.

99.155 Research, Independent Study 2-6 h.s.
Students pursue an independent study or research in biochemistry with the student and faculty member mutually developing an area of interest in advance of enrollment. Requires written plan. Prerequisites: 99.155.

99.165 Biochemistry Tutorial 0 h.s.
For health science students. An introduction to advanced biochemistry for with the health science student. Prerequisite: consent of instructor.

99.166 Biochemistry for Dental Students 4 h.s.
Designed for dental students who have not had equivalent biochemistry courses. Course of lectures, demonstrations, and conferences, and conferences, and of students submitted only after consultation with staff.

99.167 Biochemistry for Pharmacy Students 4 h.s.
Designed for pharmacy students who have not had equivalent biochemistry courses. Course of lectures, demonstrations, and conferences, and of students submitted only after consultation with staff.

99.168 Biochemistry for Medical Students 5 h.s.
Designed for medical students who have not had equivalent biochemistry courses. Course of lectures, demonstrations, and conferences, and of students submitted only after consultation with staff.

99.169 Biochemistry for Students 3 h.s.
One-semester lecture course focusing on chemistry and molecular biology of biochemistry and the techniques used to maintain them. Prerequisite: two semesters of general chemistry, one semester of organic chemistry.

99.171 Advanced Seminar 4 h.s.
Same as 311.711-311.712.

99.172 Electron Microscopy 3 h.s.
Application of electron microscopy to the macromolecular structure of biological systems. Prerequisites: 99.121, 99.133, 311.371 or equivalent. Consent of instructor required.

99.173 Cellular Biochemistry 2 h.s.
Same as 311.736.

99.205 General Chemistry 3 h.s.
Students with bachelor's degrees in any of the biological, biochemical or physical sciences are encouraged to apply. Required preparation includes advanced college-level coursework in physical chemistry, biologic, physics and mathematics through calculus. Students with demonstrated ability may make up deficiencies after enrollment.

Beyond the general Graduate College admission requirements (see the Graduate College section of the Catalog), minimum requirements of the Department include an undergraduate grade-point average of 3.0 (A=4.0), with a 3.0 average in science and mathematics courses, and an acceptable score on the verbal, quantitative, and analytical sections of the Graduate Record Examination Aptitude Test.
The aims of the Department of Dermatology are the teaching of medical students and training of dermatology residents in the care of patients with skin disease. In addition, it provides opportunity for the development of research skills in the field of dermatology. This is one of very few dermatology 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. A good cross-section of patients is available, due to the mixture of private and clinic patients, including a large number referred from the Student Health Service. Additional patients are seen at the nearby Veterans Administration Hospital. Various activities are available for fourth-year medical students, including further clinical experience, dermatologic research and special studies.

Dietetic Internship

Department head: John S. Swanson
Faculty members: John S. Swanson, Daniel T. O'leary, John S. Swanson
associate professor Richard L. Zurcher
assistant professor Roger F. Collie
clinical assistant professor Robert F. Godwin, Jun, Kyle B. VanHorn

University of Iowa Hospitals and Clinics offers a Dietetic Internship Program which qualifies graduates to take the American Dietetic Association registration examination. The program is fully accredited by the ADA.

Counsellors marking the program are administered by the University of Iowa College of Medicine. The following are required:

90:231 Cell Surfaces 1-2 s.h.
Architecture of components of eukaryotic cell surfaces with emphasis on cell-cell interaction, intercellular recognition, and export of membrane and secretory glycoproteins. Human and animal cells, focusing on human receptors for peptide hormones, lectins and toxins. Prerequisites: 99:120, 99:130, or consent of instructor.

90:233 Chromosome Biochemistry 1-2 s.h.
Chemical and structural properties of protein and nucleic acid components for the dynamics of replication assembly and repair, role in relating the DNA sequence complexity in chromosomes, properties of isolated fibers and chemical sequence of nucleic acids. Prerequisites: 99:120, 99:130, or consent of instructor.

90:235 Physical Biochemistry Techniques 1-2 s.h.
Independent study of experimental methods to accomplish the isolation and study of biochemical problems. May be repeated for credit. Prerequisites: 99:120, 99:130, or consent of instructor.

90:248 Biochemistry and Molecular Microbiology 1-2 s.h.
Mechanisms for ATP generation by substrate level phosphorylation, oxidative, and phosphoribosylation; composition and function of nucleotides and other energy-generating molecular organisms and inorganic reactions; review of chemical coupling, ferrimagnetic and chemoresponsive properties for oxygen and phosphorylative ATP utilization in刑oneplex, transport and intervention. Prerequisites: 99:120, 99:130, or consent of instructor.

90:237 Topics in Biochemistry 1-2 s.h.
Independent study of a specialized area of biochemistry. Topic will change annually. May be repeated for credit. Prerequisites: 99:120, 99:130, or consent of instructor.

90:248 Lipids 1-2 s.h.
Lipid metabolism and function primarily in cellular systems. Application of these principles to human disease. Chemical and physical properties including biophysical properties and intracellular biosynthesis. Prerequisites: 99:120, 99:130, or consent of instructor.

90:261 Research Techniques 1-2 s.h.
Only for graduate students in biochemistry, student teaching in development and application of basic techniques in laboratory of student's advisor. Prerequisite 99:120.

90:277 Seminar in Cell and Molecular Biology 1 s.h.

90:282 Seminar 1 s.h.
Reception of graduate students in biochemistry guests participate in seminars and attend general faculty group.

90:266 Advanced Techniques in the Nucleic Acids 1 s.h.

90:285 Research Biochemistry 1 s.h.
Research in the individual faculty members, open only to graduate students in biochemistry.

Endocrinology

Faculty members: Kristie Hahn (Anatomy and Physiology and Biophysics), Robert Fisher (Physiology and Biophysics), Mary Cram (Cellular and Molecular Medicine and Biochemistry), Roy Palko (Dentistry and Ophthalmology), Charles A. Pedersen, Lorenz Van Der Osten (Pharmacology), associate professor Joseph Brown (Inorganic Chemistry), Frederic Chappell (Osteopathic and Ophthalmology), Genni Llewellyn-Brown (Ophthalmology), Barney Goodall (Ophthalmology), Mary Cram (Cellular and Molecular Medicine), Van Der Osten (Clinical Medicine), Mary Cram (Dermatology and Ophthalmology), associate professor Robert N. (Clinical Medicine), morning session: Mary Crum (Dermatology and Biophysics), Barney Goodall (Ophthalmology), Van Der Osten (Clinical Medicine), Richard M. Warr (Physiology and Biophysics)
Endocrinology is an interdisciplinary program involving faculty members from the departments of Anatomy, Biochemistry, Internal Medicine, Obstetrics and Gynecology, Pediatrics, Pharmacology, Physiology and Biophysics, and Zoology.

Degrees are not offered in endocrinology. Students whose primary interest is in endocrinology may enroll in the M.S. and/or Ph.D. programs offered by the departments cooperating in Endocrinology. As a rule, the course of studies for endocrinological emphasis encompasses offerings from several departments, and students may often find it appropriate to avail themselves of facilities of departments outside their parent department. Also, several of the Endocrinology courses are broadly interdepartmental with respect to the teaching staff, which often includes instructors from clinical departments.

Since endocrinology involves microscopic anatomy, physiology and biochemistry, students are expected to be well grounded in these disciplines. Further, since the endocrine system complements and links with the other great integrative system of the body, the nervous system, familiarity with neurobiology is also highly desirable in students of endocrinology.

With the aid of a Biomedical Sciences Development Award from the National Science Foundation, the University has added to its faculty in Endocrinology. Clinical departments have also substantially increased their strength in this area.

**Courses**

For course descriptions, see the appropriate departmental section.

**Anatomy**

60:118 Endocrinology for Medical Students 2 s.h.

**Biochemistry**

99:204 Cellular Endocrinology 2 s.h.

**Physiology and Biophysics**

72:203 Molecular Endocrinology 2 s.h.

72:204 Cellular Endocrinology 2 s.h.

**Zoology**

37:126 Comparative Physiology 3-4 s.h.

37:150 Introductory Endocrinology 2 s.h.

37:152 Endocrinology Laboratory 2 s.h.

37:225 Seminar: Endocrinology 2 s.h.

37:228 Seminar: Hormones and Behavior 2 s.h.

**Family Practice**

Department head: Robert C. Redd

Family practice professors: N. A. Carpenito, Roger C. Redd

Assistant professors: Leonard L.2. Gentry, William F. Parker, Robert R. Walter


The Family Practice program was initiated in answer to the need for more primary-care physicians in Iowa and throughout the nation.

Appropriate coursework in the Department is included throughout the four-year M.D. program. The Department's 18 elective senior rotations gives students opportunities for exposure to the many communities through work in affiliated hospitals or connected facilities, in the Department's Oakdale, Williamsgrove and University Hospitals offices, and in preceptships with selected family physicians throughout the state. There is also ample opportunity for independent study during the senior year, and an international health care elective offers exposure to primary health care systems of other countries.

**Residency**

The Department directs a three-year residency program, graduates of which are eligible for certification by the American Board of Family Practice. This residency trains physicians to provide continuing and comprehensive care to the total family unit, utilizing a concept integrating the patient, allied health professionals and the physician into an efficient and effective health care team.

The program is intentionally flexible to allow each resident freedom to tailor his or her training to individual interests and needs; it includes a broad spectrum of electives in Internal medicine, pediatrics, obstetrics and gynecology, psychiatry, medical and surgical subspecialties and community medicine. The program currently offers 72 individual rotations.

The home-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 experience 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.

**Teaching Fellowship**

A two-year teaching fellowship in Family Practice begins each July 1. Its primary goal is to train physicians for academic roles in Family Practice departments or residency programs. Skills taught include research methodologies, administrative and teaching techniques, and modern educational methods.

**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 Oakdale Campus, four miles to the northwest, and at Williamsburg, 25 miles west of Iowa City. The Williamsgrove office is the only medical office in that community. In all offices, patient families are assigned to a resident with
Hospital and Health Administration

Since its inception in 1960, the Graduate Program in Hospital and Health Administration has offered two degree programs each having distinct, mutually reinforcing academic objectives.

The Master of Arts Program is designed for individuals who seek positions of executive leadership in health organizations.

The Doctor of Philosophy Program is oriented primarily to individuals who are interested in careers in teaching and research in the health fields, although individuals seeking senior managerial appointments in health organizations are also encouraged to apply.

The Master of Arts Program

The curriculum for the Master of Arts degree in hospital and health administration requires two years of full-time study. It is aimed at preparing students with the knowledge, attitudes, and skills required to function in responsible managerial positions in hospitals, long-term care institutions, ambulatory care facilities, planning agencies, and related health care organizations.

In the first year, courses are designed to familiarize students with the social, political, economic, and legal environments of hospitals and health care institutions, concepts, tools, and techniques for effective and ethical managerial decision-making, planning, and control are introduced. The entire program is founded upon an interdisciplinary approach which includes exposure to the theoretical and applied aspects of health systems management.

In the second year, the curriculum is oriented to the special interests and career objectives of individual students, and administrative residency may be arranged as an integral aspect of the program of study. Students will be provided with opportunities to concentrate in areas such as hospital administration, health planning, or long-term care administration.

Although a thesis is optional for the master's degree, students who wish to pursue doctoral studies are encouraged to engage in research leading to preparation of a thesis.

The normal program of study leading to the master's degree consists of fifty-four semester hours of graduate work. All master's students must complete eight required courses which represent a core set of disciplines and fields of knowledge.

The courses are as follows:

- 80:101 Introduction to Health Care Organization 3 s.h.
- 80:105 Health Administration 3 s.h.
- 80:104 Economics of Health Care 3 s.h.
- 80:108 Legal Aspects of Health and Medical Care 3 s.h.
- 80:118 Quantitative Applications in Health Care 3 s.h.
- 80:122 Financial Management of Hospital and Health Institutions 3 s.h.
- 80:125 The Politics of Health Policy 3 s.h.
- 80:130 Issues in Health Administration 3 s.h.

In addition to the courses offered by the Program, students are encouraged to take advantage of relevant courses offered by the Department of Preventive Medicine and Environmental Health in the College of Medicine, and in the College of Business, Nursing, Pharmacy, Education, and Liberal Arts.

The Doctor of Philosophy Program

The primary purpose of the doctoral program is to prepare scholars who are competent to the pursuit of excellence in teaching and research and in management and policy development in the health fields.

Applicants are generally expected to possess a master's degree in health administration, medical care organization, public health, or in other fields related to health. Qualified applicants may be admitted to doctoral study after completion of the baccalaureate.

An option available to students in the master's program permits filing a joint program for the M.A. and Ph.D. degrees.

At the doctoral level, the curriculum is organized into four basic fields of study, and students are expected to demonstrate competency in each:

- Research Methodology and Quantitative Analysis
- Health Systems Management and Evaluation
- Political, Social, and Economic Aspects of Health Care
- Student Care Organization

Doctoral students will be exposed to advanced courses in health services management, health policy, and health services research. Doctoral candidates are required to complete a minimum of 90 semester hours of graduate work (12 comprehensive examination and) and submit an acceptable dissertation.

In addition to satisfying the specific requirements of the Program, the doctoral student must satisfy the requirements of the Graduate College.

Admission procedures are the same for M.A. and Ph.D. students.

Admission

Qualified students with a baccalaureate degree, in any discipline, from an accredited college or university, may apply for admission.

Introductory undergraduate courses in accounting, economics, management, and statistics are prerequisite. In special cases, at the discretion of the faculty, students may be permitted to complete prerequisite courses subsequent to admission.

Students must have a 3.0 grade-point average for regular admission, although a student with a lower grade-point average may be admitted to conditional status upon the recommendation of the faculty.

All students applying for admission are required to furnish completed application forms, official transcripts of all graduate and undergraduate coursework, letters of recommendation, and a brief personal outline of professional objectives. Applicants are required to take the Graduate Record Examination and are encouraged to take the Graduate Management Admission Test. A personal interview is usually requested prior to admission.

Applications are accepted for admission in the fall semester only, and early applications are encouraged. Completed applications must be filed not later than July 15.
Graduate Program

See "College of Liberal Arts."

Ph.D. Program

A candidate for the Ph.D. must satisfy departmental course requirements deter-
mind by his/her advisory committee (minimum requirement: one course in each 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, and 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 slowed, but students admitted without the above coursework must complete the balance of graduate work during the first 6 months 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

01:132 Medical Microbiology 3 s.h.

Inclusive and essential methods and techniques used in study of microorganisms, with a particular emphasis on those organisms involved in infectious diseases. Current concepts of immunology. Prerequisites: registration in College of Medicine.

01:150 Microbiology Elective 3 s.h.

For four-year medical students wishing to take additional coursework or research in medical microbiology, medical Mycology, immunology, virology or other subdisciplines.

01:158 Microbiology for Physicist’s Resident Students 2 s.h.

Introduction to course in medical microbiology with emphasis given to the more common encountered pathogens, immunogonogens, and procedures used in a physician’s office. Prerequisite: registration as physician’s assistant.

01:147 Survey of Immunology 3 s.h.

Interdisciplinary survey of fundamentals of cellular and molecular immunology and application to clinical problems: appreciation of facts as well as those which involve faculty from the Department of Microbiology, Internal Medicine, Obstetrics and Gynecology, Laboratory Medicine, and Surgery. Prerequisite: an introductory course in microbiology or departmental approval and consent of dean of medicine. Same as 10:211.

01:137 General Microbiology 4 s.h.

Principles and applications of microbial physiology, microbial genetics, virology, immunology and pathological microbiology. Laboratory includes methods used for isolating and identification of bacteria; laboratory culture and isolation of microorganisms, identification of virulence factors, and use of microorganisms for vaccine production. Prerequisite: 01:158 and consent of instructor.

01:149 Pathogenic Bacteriology 4 s.h.

Bacterial cell wall structure and function, growth, energy metabolism, stability and control mechanism. Laboratory includes techniques for isolation of microbial pathogens, identification of metabolic pathways and study of microbial enzymes. Prerequisites: 01:158, a bacteriological course and consent of instructor.

01:131 Problems in Microbiology 3 s.h.

Student work on research problem under supervision of a faculty member. For undergraduate students with significant background, Prerequisite: 01:127 or equivalents, and consent of instructor.

01:136 General Microbiology 5 s.h.

Introductory course covering microbiology, immunology, pathological bacteriology, virology, oral microbiology. Open only to dental students.

01:135 Seminar in Microbiology 1 s.h.

Lectures and discussions by faculty, students and guest speakers on current topics in microbiology and virology. Prerequisites: 01:136 and instructor approval.

01:148 Microbiology 4 s.h.

Principles and applications of microbial physiology, microbial genetics, virology, immunology and pathological microbiology. Laboratory includes techniques for isolation of microbial pathogens, identification of metabolic pathways and study of microbial enzymes. Prerequisites: 01:158, a bacteriological course and consent of instructor.

01:137 Clinical Laboratory Microbiology 4 s.h.

Principles of clinical microbiology. Laboratory work and clinical laboratory techniques. Prerequisite: 01:158 or instructor approval. 01:127 or instructor approval. Prerequisite: 01:158 or consent of instructor.

01:138 Clinical Laboratory Microbiology 2 s.h.

Principles and practical training in real situations and the laboratory diagnosis and identification of microorganisms. Prerequisite: 01:158 or instructor approval. Prerequisite: 01:158 or instructor approval. Prerequisite: 01:158 or instructor approval.

01:139 Experimental Immunology 6 s.h.

Laboratory-oriented course designed to provide practical experience with qualitative and quantitative methods for the study of immunology. Includes study of major bacterial and viral antigens and antibodies, estimation of immunocompetence, and the role of immunology in understanding of bacterial and viral diseases, and in the study of immunity. Prerequisite: 01:157, 01:158 or instructor approval. Prerequisite: 01:157, 01:158 or instructor approval.

01:138 Antigenic Structure 4 s.h.

Basic techniques in study of cell antigens and the role of viruses in disease. Prerequisites: 01:137, introductory biochemistry, and consent of instructor.

01:120 Medical Mycology 4 s.h.

Basic techniques and principles of medical mycology for man and lower animals. Prerequisite: introductory course in microbiology. Same as 10:211.
MEDICINE/Microbiology

06.1172 Microbial Genetics

3 s.h.

Service in bacteriology and virology. Correlates supplement to a laboratory course 61.175. Students take the same examination as 61.172. Prerequisites: 61.115 or consent of instructor.

06.1171 Human Microbiology

arr.

Introduction to experimental research. Open to juniors and seniors with at least a 3.0 grade-point average overall and 3.0 in microbiology.

06.1172 Human Microbiology

arr.

Prerequisite: 61.117.

06.1173 Laboratory Methods in Cellular Immunology

3 s.h.

Intermediate level course in immunology designed to assist graduate students, medical students, and fourth-year medical students with fundamental principles of cellular immunology and methods useful for investigating these theories. Emphasis placed on role of lymphocytes in the immune response. Prerequisites: 61.100 or 61.147 and consent of instructor.

06.1175 Microbial Genetics Laboratory

1 s.h.

Experiments illustrating basic principles of genetic analysis in bacteria and bacteriophage. Corequisite: 61.172.

06.1176 Advanced Genetics

4 s.h.

Senior or graduate level. Course covering basic genetic topics. Topics vary on a three-year cycle so student may not repeat the same topics twice. Topics include: recombination in bacteria, the molecular biology of restriction enzymes, recombinant DNA techniques, bacterial genetics, bacterial virology, and the molecular biology of viruses.

06.1207 Molecular Immunology

3 s.h.

Advanced level course covering basic concepts and recent research in proteins. Topics vary on a three-year cycle. Topics include: the structure and function of the immune system, the interactions of antigens with the immune system, and the role of the immune system in disease.

06.1215 Advanced Electron Optical and Laser Techniques

5 s.h.

Senior or graduate level. Course covering basic concepts and recent research in electron optical and laser techniques. Topics include: the structure and function of the immune system, the interactions of antigens with the immune system, and the role of the immune system in disease.

06.1216 Topics in Microbial Physiology

arr.

Topics in microbial physiology. Prerequisites: Consent of instructor.

06.1210 Topics in Molecular Genetics

arr.

Topics in bacterial genetics. Prerequisites: Consent of instructor.

06.1211 Research in Microbiology

arr.

Open to candidates for advanced degrees in microbiology.

06.1212 Topics in Animal Virology

1 s.h.

Current topics in animal virology may be repeated. Prerequisite: 61.100 or consent of instructor.

06.1260 Topics in Microbial Ecology

arr.

Topics in microbial ecology. Prerequisites: 61.100 or consent of instructor.

06.1270 Seminar in Cellular and Molecular Biology

1 s.h.

Service course in cellular and molecular biology. Students prepare and present a seminar. Prerequisites: Consent of instructor.
Neurology

Department Head: Morice W. Van Allen
Faculty: professors Morice Van Allen, William E. Bell (Pediatrics), Arthur L. Banker (Psychology), Kintner
clinical instructors: James D. Alperin, John H. McQuade, Robert A. Rosen

Neurology is the branch of medical science concerned with disorders of the brain, spinal cord, and peripheral nervous system, their diagnosis and management. Teaching and postgraduate training in this field, carefully integrated with patient care, has long been a significant function of the Department.

The Department offers clinical and clinical neuroscience training to third- and fourth-year medical students, contributing to the Doctor of Medicine degree. An active three-year approved residency program qualifying physician residents for board certification in neurology is a major aspect of departmental activity. Experience in the Division of Clinical Electrophysiology, as well as in pediatric neurology, psychiatry, and neuropsychology in conjunction with these departments is part of the training. The Department of Neurology also offers research opportunities in behavioral neuroscience to candidates for the degree of Doctor of Philosophy in psychology.

Investigative interests of the staff center on speech disorders, diction, stuttering, behavioral abnormalities based on disease of the nervous system, electrophysiological correlates of disease, and biochemistry of the antimetabolites drugs. The Department sponsors an active neuroscience physiology laboratory. The Department has collaborated in the Central Registry for the International Cooperative Anaerobic Project, funded by the National Institutes of Health.

Courses

04.11 Clinical Neurology 2 s.h.
Word reading and writing abnormalities in small groups, or management of ambulatory patients. This year.

04.112 Principles of Neurology 2 s.h.
Lecture, demonstrations, and case presentation of neurologic disorders usually treated by therapeutic anatomy of nervous system reviewed and methods of electrical testing of nerve injuries demonstrated.

04.291 Research Neurology 2 s.h.
volume demands, led to the development of this new allied health occupation.

Nuclear medical technologists work predominately in hospitals and clinics in all phases of radionuclide uses in medicine: daily preparation of radiopharmaceuticals for use in patients; preparation of patients for organ imaging, blood flow studies, metabolite absorption and utilization studies, or quantification of total body content of a variety of substances; carrying out any of the above studies, including preparing image or data records for physician review; using reagents tagged with radionuclides in a variety of highly specific and sensitive assays of hormones, drugs in blood, urine.

The Program at Iowa

The program in Nuclear Medicine Technology at Iowa is accredited by the Council on Medical Education of the American Medical Association. Fulfillment of the requirements established by the AMA Accreditation Board involves three years of practical work in the College of Liberal Arts and a minimum of 12 months of professional clinical experience, available in the University of Iowa Medical Center.

Upon satisfactory completion of the entire four-year program, the student receives the Bachelor of Science degree with a major in general science and nuclear medical technology, and is eligible for national certification as a nuclear medicine technologist.

Preclinical Program

The required preclinical courses emphasize the physical and biological sciences, which provide a basic background and which are prerequisites for the subjects and activities of the clinical year. The following is a summary of the prerequisites for acceptance into the Nuclear Medicine Technology Program:

- Satisfaction of the College of Liberal Arts general requirements, and the requirements for a general science major.
- A minimum of 36 semester hours distributed 16-12-8 among chemistry, zoology and physics.
- A minimum of 6 semester hours in mathematics, and
- A minimum of 96 semester hours in all coursework with a 2.0 minimum cumulative grade-point average.

Clinical Program

The clinical year is centered in The University of Iowa Hospitals and Clinics. In terms of time allocation, both classroom and clinical experiences are emphasized. The classroom portion continues in depth the clinical or technical specialties of physics of nuclear medicine, basic instrumentation, scanning instrumentation, radiochemistry, radiopharmaceuticals, electrophoresis, chromatography, radiolabeling, chemical health physics, principles of nursing care techniques, principles of clinical administration, doctor's conference and scan critique, fundamentals of microbiology, chemistry, clinical chemistry, kinetic studies, and medical ethics, in vitro clinical experience rotations are established in radiopharmacy procedures, clinical nuclear pharmacetical laboratory, tracer techniques and research applications, thyroid function studies and rectilinear and camera scanning, and in kinetic studies in vivo.

Admission

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

Obstetrics and Gynecology

Department Head: R.H. Peters
Faculty Professor: Harold J. Bucholz, P.H. Chappel, R.P. Gaudal, C.P. Scott, W.C. Swart, R.A. Peters, D.C. Van Orden
Assistant Professor: C.A. Prizer, R.R. Hughes, R.H. Knuecke
Assistant Professor: Albert W. Baston, Dwight P. Dalrymple, B.D. Lane, D.J. Zander
Assistant Professor: Douglas W. Lockett

Coursework 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 lecture, laboratory and patient assignments ward rounds, teaching seminars and special elective courses.

The third-year clerkship (66-C) Clinical Obstetrics and Gynecology Center is a core of information he or she will need to be prepared to care for women no matter what her or her career choice.

In the fourth year a variety of electives is available, intended to train the student in the skills of obstetrics and gynecology in a private hospital setting or in a multispecialty clinic. These electives include rotations at Broadwater County Hospital, Des Moines; Pocher Clinic and Conway Memorial Hospital, Monroe, Louisiana; Medical Associates, Dubuque; Methodist Hospital, Des Moines, and the Gunderson Clinic, LaCrosse, Wisconsin, in addition to clerkships at the University of Iowa Hospitals and Clinics.

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 four years, the resident rotates through the various divisions of the Department and cares for both hospital inpatients and outpatients. Additional training is obtained in prenatal clinic and in endocrinology and gynecology. During the final year, the resident spends time at Methodist and Broadwater Hospitals in the cities of Des Moines and St. Luke's Hospital in Davenport. In the fourth year, the resident spends time at Methodist and Broadwater Hospitals in the cities of Des Moines and St. Luke's Hospital in Davenport. In the fourth year, the resident spends time at Methodist and Broadwater Hospitals in the cities of Des Moines and St. Luke's Hospital in Davenport. In the fourth year, the resident spends time at Methodist and Broadwater Hospitals in the cities of Des Moines and St. Luke's Hospital in Davenport. In the fourth year, the resident spends time at Methodist and Broadwater Hospitals in the cities of Des Moines and St. Luke's Hospital in Davenport.

Fellowship Programs

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 in Special Competence in Gynecologic Oncology.
Endocrinology
The Department offers a two-year fellowship in endocrinology. 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 Endocrinology.

Maternal-Fetal Medicine
The Department offers a two-year fellowship in maternal-fetal medicine. 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 Maternal-Fetal Medicine.

Courses
84.0 Clinical Studies and Gynecology 6 s.h.
Clinical studies designed to develop proficiency in special obstetric and gynecologic conditions. This includes didactic and clinical components. The emphasis is on patient assessment, management, medical-surgical aspects, and the application of new diagnostic and therapeutic techniques.

85.0 Advanced Obstetric Clinic: Iowa City 16 s.h.
Fellows work in the Obstetrics and Gynecology Clinic, focusing on second- and third-trimester care, including prenatal care, high-risk pregnancies, labor and delivery, and postpartum care.

86.0 Advanced Obstetric Clinic: Des Moines 16 s.h.
Fellows work in the Obstetrics and Gynecology Clinic, focusing on second- and third-trimester care, including prenatal care, high-risk pregnancies, labor and delivery, and postpartum care.

87.0 Advanced Obstetric Clinic: Dallas 16 s.h.
Fellows work in the Obstetrics and Gynecology Clinic, focusing on second- and third-trimester care, including prenatal care, high-risk pregnancies, labor and delivery, and postpartum care.

Ophthalmology
Department Head: Fredrick C. Boyd, M.D.
Fellows: Frederick C. Boyd, M.D., Steven H. Hayworth, M.D., John L. Hutton, M.D., Susan L. Jones, M.D., Robert C. Kamradt, M.D., and Karl D. Kuebler, M.D.

Ophthalmology is a medical and surgical specialty concerned with the diagnosis, treatment, and prevention of eye diseases. Fellows are trained in comprehensive ophthalmology, including primary care and subspecialties.

The fellowship program is designed to prepare fellows for a career in academic ophthalmology. It includes clinical experience in various areas of ophthalmology, such as cornea, external diseases, pediatric ophthalmology, retina, and uveitis.

Facilities
The Department maintains several research laboratories for the study of eye diseases. These laboratories include a histology laboratory, electron microscopy laboratory, and molecular biology laboratory. The Department also has a clinical laboratory for the diagnosis and treatment of eye diseases.

Courses
81.066 Ophthalmology: An Introduction 4 s.h.
This course provides an overview of ophthalmology, including the anatomy and physiology of the eye, clinical examination, and basic diagnostic procedures.

81.067 Ophthalmology: Cataract Surgery 4 s.h.
This course covers the surgical management of cataracts, including diagnosis, preoperative care, surgical techniques, and postoperative management.

81.068 Ophthalmology: Uveitis 4 s.h.
This course focuses on the diagnosis and management of uveitis, including infectious, inflammatory, and immune-mediated conditions.

81.069 Ophthalmology: Retina 4 s.h.
This course covers the diagnosis and management of retinal disorders, including diabetic retinopathy, age-related macular degeneration, and macular degeneration.

81.070 Ophthalmology: Glaucoma 4 s.h.
This course focuses on the diagnosis and management of glaucoma, including open-angle glaucoma, closed-angle glaucoma, and ocular hypertension.

81.071 Ophthalmology: Strabismus and Orbit 4 s.h.
This course covers the diagnosis and management of strabismus and orbit disorders, including congenital and acquired conditions.

81.072 Ophthalmology: Cornea 4 s.h.
This course focuses on the diagnosis and management of corneal disorders, including keratoconus, corneal ulcers, and corneal transplants.

81.073 Ophthalmology: Pediatrics 4 s.h.
This course covers the diagnosis and management of pediatric ophthalmology, including strabismus, amblyopia, and neuro-ophthalmology.

81.074 Ophthalmology: Oculoplastics 4 s.h.
This course focuses on the diagnosis and management of oculoplastics, including eyelid disorders, congenital anomalies, and traumatic injuries.

81.075 Ophthalmology: Neuro-Ophthalmology 4 s.h.
This course covers the diagnosis and management of neuro-ophthalmology, including headache, diplopia, and visual field defects.

81.076 Ophthalmology: Infectious Diseases 4 s.h.
This course focuses on the diagnosis and management of infectious diseases of the eye, including bacterial, viral, and fungal infections.

81.077 Ophthalmology: Vitreoretinal 4 s.h.
This course covers the diagnosis and management of vitreoretinal disorders, including diabetic retinopathy, macular degeneration, and retinal detachments.

81.078 Ophthalmology: Ocular Oncology 4 s.h.
This course focuses on the diagnosis and management of ocular malignancies, including conjunctival and intraocular cancers.

81.079 Ophthalmology: Corneal Transplantation 4 s.h.
This course covers the diagnosis and management of corneal transplantation, including surgical techniques, donor selection, and postoperative care.

81.080 Ophthalmology: Retinal Detachment 4 s.h.
This course focuses on the diagnosis and management of retinal detachment, including surgical techniques, laser photocoagulation, and medical management.

81.081 Ophthalmology: Glaucoma Surgery 4 s.h.
This course covers the diagnosis and management of glaucoma surgery, including trabeculectomy, Ahmed valve, and other surgical procedures.

81.082 Ophthalmology: Retinopathy of Prematurity 4 s.h.
This course focuses on the diagnosis and management of retinopathy of prematurity, including screening, treatment, and follow-up care.

81.083 Ophthalmology: Uveitis and Inflammation 4 s.h.
This course covers the diagnosis and management of uveitis and inflammation, including infectious and autoimmune disorders.

81.084 Ophthalmology: Oculoplastics and Proptosis 4 s.h.
This course focuses on the diagnosis and management of oculoplastics and proptosis, including traumatic injuries, congenital anomalies, and mass lesions.

81.085 Ophthalmology: Retinal Detachment and Vitreous 4 s.h.
This course covers the diagnosis and management of retinal detachment and vitreous hemorrhage, including surgical techniques and laser photocoagulation.

81.086 Ophthalmology: Neuro-Ophthalmology 4 s.h.
This course focuses on the diagnosis and management of neuro-ophthalmology, including headache, diplopia, and visual field defects.

81.087 Ophthalmology: Ocular Oncology 4 s.h.
This course covers the diagnosis and management of ocular malignancies, including conjunctival and intraocular cancers.

81.088 Ophthalmology: Corneal Transplantation 4 s.h.
This course covers the diagnosis and management of corneal transplantation, including surgical techniques, donor selection, and postoperative care.

81.089 Ophthalmology: Retinal Detachment 4 s.h.
This course focuses on the diagnosis and management of retinal detachment, including surgical techniques, laser photocoagulation, and medical management.

81.090 Ophthalmology: Glaucoma Surgery 4 s.h.
This course covers the diagnosis and management of glaucoma surgery, including trabeculectomy, Ahmed valve, and other surgical procedures.

81.091 Ophthalmology: Retinopathy of Prematurity 4 s.h.
This course focuses on the diagnosis and management of retinopathy of prematurity, including screening, treatment, and follow-up care.

81.092 Ophthalmology: Uveitis and Inflammation 4 s.h.
This course covers the diagnosis and management of uveitis and inflammation, including infectious and autoimmune disorders.

81.093 Ophthalmology: Oculoplastics and Proptosis 4 s.h.
This course focuses on the diagnosis and management of oculoplastics and proptosis, including traumatic injuries, congenital anomalies, and mass lesions.

81.094 Ophthalmology: Retinal Detachment and Vitreous 4 s.h.
This course covers the diagnosis and management of retinal detachment and vitreous hemorrhage, including surgical techniques and laser photocoagulation.

81.095 Ophthalmology: Neuro-Ophthalmology 4 s.h.
This course focuses on the diagnosis and management of neuro-ophthalmology, including headache, diplopia, and visual field defects.

81.096 Ophthalmology: Ocular Oncology 4 s.h.
This course covers the diagnosis and management of ocular malignancies, including conjunctival and intraocular cancers.

81.097 Ophthalmology: Corneal Transplantation 4 s.h.
This course covers the diagnosis and management of corneal transplantation, including surgical techniques, donor selection, and postoperative care.

81.098 Ophthalmology: Retinal Detachment 4 s.h.
This course focuses on the diagnosis and management of retinal detachment, including surgical techniques, laser photocoagulation, and medical management.

81.099 Ophthalmology: Glaucoma Surgery 4 s.h.
This course covers the diagnosis and management of glaucoma surgery, including trabeculectomy, Ahmed valve, and other surgical procedures.

81.100 Ophthalmology: Retinopathy of Prematurity 4 s.h.
This course focuses on the diagnosis and management of retinopathy of prematurity, including screening, treatment, and follow-up care.

81.101 Ophthalmology: Uveitis and Inflammation 4 s.h.
This course covers the diagnosis and management of uveitis and inflammation, including infectious and autoimmune disorders.

81.102 Ophthalmology: Oculoplastics and Proptosis 4 s.h.
This course focuses on the diagnosis and management of oculoplastics and proptosis, including traumatic injuries, congenital anomalies, and mass lesions.

81.103 Ophthalmology: Retinal Detachment and Vitreous 4 s.h.
This course covers the diagnosis and management of retinal detachment and vitreous hemorrhage, including surgical techniques and laser photocoagulation.
Orthopaedic Surgery

Department head: Raphael R. Cooper
Associate professors: Michael Silvership, Raphael R. Cooper
Residents: Frank M. Stettler, Joseph M. Breslow, William H. Chilvers
Research director: Arnold E. Martin, Camerone B. Searle
Research associates: John P. Wright, Richard R. Brand
Jarron J. Mermelstein, Bruce L. Breslow
Assistant professor: Martin L. Statham, Brian L. Whitaker

The Department offers two types of postgraduate training—a five-year integrated clinical program to which the trainee and resident participate simultaneously in inpatient care, outpatient care, surgery, and science related to the neuromusculoskeletal system, and a five-or six-year program for those interested in full-time academic orthopaedic careers.

The Clinical Program

Trainees enter this program through the National Internship Matching Plan diversity out of medical school. This program consists of a one-year categorical residency in orthopaedics and 6-7 years in orthopaedic residency.

During the internship year, the trainee gains experience not only in clinical orthopaedics, but in medicine, pediatrics, neurology, surgical specialties, intensive care and anesthesiology.

During the following years, residents gain experience in trauma, children's orthopaedics, adult orthopaedics, neuromuscular disorders, rehabilitation, prosthesis and orthotics, traumatology and basic science as related to orthopaedics. The residents take specialized courses in anatomy, bone histology, biochemistry, physiology and pathology.

A weekly seminar covers biomechanics, kinesiology and selected clinical subjects. Residents also attend the Northwestern University courses on lower extremity amputations and prosthistics.

Program for Full-Time Academic Orthopaedists

This program includes 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 orthopaedic laboratories or in a basic science department.

Departmental Laboratories

The orthopaedic laboratories deal with problems in these major subject areas:

- Biomechanics—The biochemistry of musculoskeletal cells and tissues, both normal and those altered by extrinsic or intrinsic factors.
- Bone and cartilage biology and biochemistry of the cartilage, bone, synovial fluid and joint.
- Cell biology and pathology—Ultrastructural studies on normal bone, cartilage, tendons and ligaments, and on those altered by disease.
- Tissue transplantation, radiological isotope and metabolic bone diseases—Skin, bone and articular transplantation and various aspects of renal and 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.

Facilities include 120 beds, an outpatient clinic, a specialty library, a specialty radiology unit, a research shop, and a physical therapy laboratory.

Physicians in the outpatient clinic see approximately 100 patients daily.

Specialty clinics deal with such problems as scoliosis, club foot, congenital dislocated hips, nerve root diseases, convulsions, neurological conditions, and trauma.

Approximately 1,500 major operations are performed each year under auspices of the Department.

The Department provides consulting service to the Hospital School for Handicapped Children, State Services for the Blind, and two state schools for the mentally retarded.

Otolaryngology and Maxillofacial Surgery

Department head: Brian H. McCall
Faculty: proffessors: James B. Boudreaux, Charles H. Brandes, William D. C. C. Kostu, C. G. Kostu, W. L. Kane, G. L. Kane
Research professors: Paul S. B. Granger, Robert D. H. Kostu, G. L. Kane
Research associates: William D. C. Kostu, W. L. Kane
Clinical professor: Charles H. Brandes

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 16, including several members from the anesthesiology, 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, the Department's faculty and staff carries a large patient load in head and neck oncology, maxillofacial trauma, craniofacial defects (such as cleft palate), disorders of the vestibular mechanism, facial plastic surgery, pediatric and genetic hearing problems, voice problems, nasal endoscopy, surgery of the head, and all the areas usually considered otolaryngological.

In addition to the major otolaryngology and maxillofacial medical-surgical service, there...
A limited number of resident physicians can be accepted each year. Applicants must be graduates of a recognized college of medicine.

The program in otolaryngology is accredited with the requirements of the American Board of Otolaryngology-HNS. The program consists of a four-year course of basic and clinical sciences.

The basic science group consists of a series of didactic lectures and laboratory studies preparatory to the clinical work. The program is conducted during the first three and one-half months of the academic year, usually July 1 to December 5 of each year.

After the oral and written examination, the student enters the clinical phase of the course, which includes supervised clinical and operative work, clinical conferences, and seminars pertinent to the practice of otolaryngology and its related fields.

To complete the requirements for the Master of Science degree, the student must earn at least an average semester hour of credit, one-third of which must come from the basic science courses, and must present a thesis.

Students capable of additional work may take elective courses.

Graduate Course in Otolaryngology

The program in otolaryngology is in accordance with the requirements of the American Board of Otolaryngology-HNS. The program consists of a four-year course of basic and clinical sciences.

The basic science group consists of a series of didactic lectures and laboratory studies preparatory to the clinical work. The program is conducted during the first three and one-half months of the academic year, usually July 1 to December 5 of each year.

After passing an oral and written examination, the student enters the clinical phase of the course, which includes supervised clinical and operative work, clinical conferences, and seminars pertinent to the practice of otolaryngology and its related fields.

To complete the requirements for the Master of Science degree, the student must earn at least an average semester hour of credit, one-third of which must come from the basic science courses, and must present a thesis.

Students capable of additional work may take elective courses.

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After passing an oral and written examination, the student enters the clinical phase of the course, which includes supervised clinical and operative work, clinical conferences, and seminars pertinent to the practice of otolaryngology and its related fields.

To complete the requirements for the Master of Science degree, the student must earn at least an average semester hour of credit, one-third of which must come from the basic science courses, and must present a thesis.

Students capable of additional work may take elective courses.
The Department offers basic courses in pathology to various health science students, a clinical training program in medical technology, a master’s degree program, specialty training leading to certification in anatomic and clinical pathology by the American Board of Pathology, and a postdoctoral training program in clinical chemistry.

**Clinical Training in Medical Technology**

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. Satisfactory completion of this program qualifies the student for the Medical Technologists Board of Registry examination for designation as medical technologist (American Society of Clinical Pathologists). 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.

The program comprises 12 consecutive months of didactic and practical instruction. The first six months are devoted to lectures, laboratory experiences, demonstrations, and seminars covering theory and technique in clinical laboratory sciences. During the last six months, the student rotates through the clinical laboratory facilities of the University of Iowa Hospitals and Clinics and the Iowa City Veterans Administration Hospital, and attends additional lectures.

The program is limited to 32 students. A class of 16 students is admitted each July and January. Admission is on a competitive basis. Applications close December 31 for the classes beginning in July and August 31 for classes beginning in January.

Eligibility for admission is the completion of:
- 94 semester hours of college study;
- 18 semester hours of chemistry, including qualitative analysis, quantitative analysis, organic chemistry, and biochemistry;
- 8 semester hours of mathematics, including a course in statistics; and
- 16 semester hours of biology including general zoology, microbiology, physiology, and parasitology.

General physics, biostatistics, and genetics are highly recommended.

Minimum cumulative grade-point averages of 2.0 overall and 2.5 in science are generally required (A=4).

An applicant who will enter the clinical training program before completing work toward a bachelor’s degree must be able, by completing the clinical training program, to satisfy all University of Iowa requirements for the Bachelor of Science degree in general science.

An applicant who will enter the program as an undergraduate student must meet the general admission requirements of the University’s College of Liberal Arts and should consult with the University as early as possible to plan preclinical studies to meet all requirements.

Because the enrollment capacity of the clinical training program is limited, the University permits students completing preclinical studies at Iowa to satisfy degree requirements by completing clinical studies in other approved medical technology programs, with prior written approval from the College of Liberal Arts.

**Graduate Program**

The graduate program in pathology is sufficiently flexible to accommodate students with varied backgrounds. Students with B.S. degrees 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 a 3.0 GPA in science courses 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 teaching, 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 degrees require a thesis.

Although the M.S. program is flexible and open to students with varied backgrounds, two structured degree programs are emphasized.

One track is designed to provide a research background for academically oriented resident physicians, or the occasional medical or dental student who may wish to pursue graduate training in pathology in conjunction with the professional school program.

The other track is especially appropriate for medical technologists to enhance their training, usually by subspecialization in an area of laboratory medicine.

**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 neuropathology, dermatopathology, and gastrointestinal pathology and special pathology of the head and neck region.

To provide these special experiences, the faculty includes members who have special interests in blood coagulation and its disorders, and diseases of the nervous system, gastrointestinal tract, skin, lungs, hematopoietic tissues, heart and blood vessels, 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 predoctoral students.

**Facilities**

The Department has laboratories equipped for histopathology, histochemistry, electron microscopy, tissue culture, special chemistry, cytology, virology and blood coagulation, as well as the usual facilities for anatomic and clinical pathology. Our recently remodeled Pathology Learning Center has areas for seminars, independent study, multimedia learning activities and small group discussions.
Courses

981 Introduction to Medical Technology 1 cr.
Survey of the role of medical technology in various laboratory settings and its relationship to the health care delivery team. Open to students in health programs. Full semester.

9814 Principal of Human Pathology 1 cr.
Course reviews basic terms, mechanisms and principles of disease and the ability to communicate these in simple terms. Open to graduate students in nutrition. Fall semester.

9812 Medical Jurisprudence 1 cr.
Lecture and discussions based on student research of medicolegal cases from Law Library or course syllabus. Guest lectures involving law, business, insurance and other management. Medical and other students by arrangement. Fall semester.

9812 Medical Technology I 1 cr.
Theories of analysis of clinical biochemistry, disease states, including methodology, instrumentation, laboratory management and report writing. History and pathology of blood-forming tissue, immune-hematology, identification of pathogenic microorganisms. Medical Technology students only.

9812 Medical Technology II 1 cr.
Survey through all areas of clinical pathology laboratory service; evaluation of proficiency in the performance of laboratory procedures on patient specimens and organization of service laboratories. Medical Technology students only.

9814 Medical Technology IV 3 cr.
Description same as for 9812.

9813 Clinical Pathologist for Physician's Assistant 1 cr.
Theory and practice of selected clinical laboratory techniques and procedures, with emphasis on proficiency of the clinical laboratory in the diagnosis and management of disease processes.

9835 Advanced Clinical Concepts in Pediatrics 1 cr.
Clinical concepts of common diseases of children, causes of disease and pathogenic mechanisms of diseases in health and disease. The pathogenesis of many acute and chronic diseases. Fall semester.

9835 Systems Pathology for Medical Students 1 cr.
Comprehensive analysis of human disease by organ systems and reviewing the contributions of pathology to clinical diagnosis and treatment. Fall semester.

9836 Principles of Human Pathology 2 cr.
Course dealing with some basic concepts of the principles of disease for all health courses. Offered fall semester.

9837 Research by Pathology 1 cr.
Research opportunity by youth member relating to basic aspects of growth or clinical patient management. On experimental design, methods, literature review and statistical analysis. Open to students in health related programs. Medical technology students by arrangement or graduate students by arrangement.

9837 Graduate Internship in Pathology 3 cr.
Formal microanatomical teaching and learning opportunities in the various clinical courses. Medical students or graduate students by arrangement.

9837 Special Topics in Pathology 3 cr.
Individualized study of special topics in pathology arranged with a faculty member. Medical student the graduate student by arrangement.

Pediatrics

Department Chair

Drs. Paul J. and Marjorie S. Banks

Pediatrics is committed to providing comprehensive care for children from birth to adolescence. We offer a wide range of services, including primary care, specialty care, and hospital services. Our goal is to provide high-quality, compassionate care for children and their families.

Pediatricians

Pediactricians are physicians who specialize in the care of children from birth to age 18. They provide medical care for children and adolescents, including preventive care, diagnosis, and treatment of illnesses.

Pediatric Nurses

Pediatric nurses are nurses who work specifically with children and pregnant women. They provide medical care for children and adolescents, including preventive care, diagnosis, and treatment of illnesses.

Pediatric nurse practitioners are nurses who have completed advanced education and clinical training in pediatric nursing. They provide care for children and adolescents, including preventive care, diagnosis, and treatment of illnesses.

Pediatricians and pediatric nurse practitioners work closely with families and other healthcare providers to ensure the best possible care for children and adolescents.

Pediatric Subspecialties

Pediatricians and pediatric nurse practitioners may specialize in a variety of areas, such as:

- Neonatology: Care for newborns
- Cardiology: Care for children with heart conditions
- Endocrinology: Care for children with endocrine disorders
- Gastroenterology: Care for children with digestive system problems
- Hematology/Oncology: Care for children with blood disorders and cancer
- Neurology: Care for children with neurological disorders
- Pulmonology: Care for children with respiratory problems
- Rheumatology: Care for children with rheumatic diseases
- Urology: Care for children with urinary tract problems

Pediatric Research

Pediatricians and pediatric nurse practitioners may conduct research to improve the health outcomes of children and adolescents. This research may involve developing new treatments, improving current treatments, or studying the causes of illnesses in children.

Pediatric Education

Pediatricians and pediatric nurse practitioners may teach medical students and residents about the care of children and adolescents. They also may participate in teaching programs for other healthcare providers.

Pediatric Advocacy

Pediatricians and pediatric nurse practitioners are advocates for the health and well-being of children and adolescents. They work to ensure that children have access to quality healthcare services and that policies and regulations support the best possible care for children and adolescents.

Pediatric Statistics

Pediatricians and pediatric nurse practitioners may use statistics to analyze data about children and adolescents. This data may be used to improve the quality of care for children and adolescents, or to inform policy decisions.
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 pharmacology is available to applicants who already hold the Doctor of Medicine degree. The specific objective of these programs is to provide increased emphasis on, and training in, the science of clinical pharmacology for residents in the various clinical specialties.

Completion of the program requires a minimum of two full years. The following core curriculum is mandatory unless specifically waived by the Pharmacology faculty:

- 63:107 Biometrics and Bioeconomy
- 71:206 Biochemical Pharmacology
- 71:100 Chemobiodynamics
- 71:103 Pharmacology and Toxicology
- 71:218 Clinical Toxicology
- 71:204 Pharmacology Seminar
- 71:203 Pharmacology Research
- 71:10 Special Topics in Pharmacology
- 71:105 Pharmacology for Health Sciences (Medical/Audit)

Additional courses may be taken as appropriate to the progress of the trainee.

At the completion of the final year, the candidate will be eligible for a Master of Science degree in pharmacology provided he or she has demonstrated sufficient proficiency in basic research, has passed the qualifying examination (written and oral) and has satisfied the thesis requirements (preparation and defense).

Ph.D. Program

Graduate students are expected to be prepared for the written and oral qualifying examinations for the Doctor of Philosophy degree at the end of two and one-half years of study, after completion of these required courses:

- 71:100 Chemobiodynamics
- 59:120 The Chemistry of Biological Materials and/or
- 59:130 Medicinal Agents
- 72:110 Neurobiology and Behavior
- 72:122 Medical Physiology
- 72:110 Endocrinology for Medical Students
- 71:101 Pharmacology for Health Sciences (Pharmacy)
- 63:107 Biometrics and Bioeconomy
- 71:103 Pharmacology and Toxicology
- 71:206 Biochemical Pharmacology
- 71:203 Pharmacology Research
- 71:204 Pharmacology Seminar
- 71:207 Pharmacology of Excitable Cells

One or more graduate biochemistry (course(s)

The student must complete at least one (1) course, appropriate to his or her interest, beyond those listed above, will more than one may be required by individual faculty research advisors.

There is no departmental foreign language requirement.

Sometime during the first graduate year the student selects a faculty research advisor. Students are encouraged to obtain a maximum of laboratory research experience during the first two years. After successful completion of the Ph.D. comprehensive exam, usually at the end of two and one-half years, the student embarks on or continues his or her Ph.D. thesis research. Thesis research usually requires two years beyond the comprehensive examination.

The Doctor of Philosophy degree is awarded upon satisfactory preparation and defense of the thesis in an oral examination.

Departmental Financial Aids

Training grants are available for graduate and postdoctoral students.

Courses

- 71:100 Chemobiodynamics

Philosophical and experimental approaches to drug research, emphasis on concepts and tools of biological research, chemical reactivity and receptor theory. In addition, the pregraduate coursework includes:

- 71:103 Pharmacology for Health Sciences (Pharmacy)

Lecture course: general principles of pharmacology, pharmacological actions of drugs and correlation with therapeutic use. Open to students in pharmacy and to qualified graduate students. In addition, the pregraduate coursework includes:

- 71:100 Chemobiodynamics

Pharmacological mechanisms by which neurotransmitters can be modified, modifying actions on cardiovascular, gastrointestinal, endocrine, respiratory and other systems. In addition, the pregraduate coursework includes:

- 71:103 Pharmacology for Health Sciences (Medical)

Lecture course: general principles of pharmacology, pharmacological actions of drugs and correlation with therapeutic use. Open to students in medicine and to qualified graduate students. In addition, the pregraduate coursework includes:

- 71:100 Chemobiodynamics

Pharmacological mechanisms by which neurotransmitters can be modified, modifying actions on cardiovascular, gastrointestinal, endocrine, respiratory and other systems. In addition, the pregraduate coursework includes:

- 71:103 Pharmacology for Health Sciences (Pharmaceutical)

Lecture course: general principles of pharmacology, pharmacological actions of drugs and correlation with therapeutic use. Open to students in pharmacy and to qualified graduate students. In addition, the pregraduate coursework includes:

- 71:100 Chemobiodynamics

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- 71:103 Pharmacology for Health Sciences (Pharmaceutical)

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- 71:103 Pharmacology for Health Sciences (Pharmaceutical)

Lecture course: general principles of pharmacology, pharmacological actions of drugs and correlation with therapeutic use. Open to students in pharmacy and to qualified graduate students. In addition, the pregraduate coursework includes:

- 71:100 Chemobiodynamics

Pharmacological mechanisms by which neurotransmitters can be modified, modifying actions on cardiovascular, gastrointestinal, endocrine, respiratory and other systems. In addition, the pregraduate coursework includes:
leading to certification in physical therapy. To be considered for admission, the applicant should have completed at least 30 semester hours of college study, including a complete introductory course and one advanced course in biology (3 h.), a complete introductory course in chemistry (8 h.), a complete introductory course in physics (8 h.), one college-level mathematics course (3 h.) and one college-level mathematics course (3 h.). All science courses must have been completed in the major department offering the course, and must include at least one-fourth laboratory instruction. The applicant should have a minimum overall grade-point average of 2.7 (A=4), and a 3.0 minimum in all courses in biology, chemistry, physics and psychology.

Graduate applicants must take the national Graduate Record Examination prior to admission. Undergraduates must take the GRE during the first year of professional training. Results of this examination must be mailed to The University of Iowa.

Applications must be made to the Director of Admissions, The University of Iowa. Personal interviews may be required. Application will be accepted for appointment if interviews are desired. The Physical Therapy admissions committee selects the applicants who appear to be the best qualified for the study and practice of the profession. Applications are accepted beginning September 1 for the following year. Twenty-five 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, primarily in research and teaching. Biomechanical, mechanical and psychological studies, including prescribed studies related to physical therapy (prevention, evaluation and treatment) are emphasized by movement disorders of the musculoskeletal, neuromuscular and cardiopulmonary areas. The program is sufficiently flexible to accommodate elective pursuits compatible with the student's abilities and interests.

Program Requirements
The program requires 30 semester hours of graduate work beyond the professional certification. A thesis is required.

Required Courses
101:281 Thesis: Physical Therapy 4 s.h.
101:212 Medical Instrumentation 3 s.h.
63:187 Biomechanics and Biomechanics 3 s.h.
101:281 Cardiopulmonary Therapeutics 3 s.h.
101:275 Evaluation of Selected Neurological Disorders 3 s.h.
101:280 Pedicure: Teaching Methods and Design 3 s.h.
and/or
01:282 Clinical Educational Practice 3 s.h.
and/or
101:116 Practicum in Research 3 s.h.
101:200 Seminar Physical Therapy 1 s.h.
101:326 Analysis of Scientific Literature 2 s.h.

Recommended Courses
101:325 Independent Study arr.
27:153 Advanced Anatomy and Physiology 2-4 s.h.
69:203 Principles of Human Pathology arr.
101:295 Electrophysiology in Rheumatology and Biomechanics 3 s.h.
71:182 Facilitation of Learning in Health Science Education 3 s.h.
79:348 Data Processing 3 s.h.
79:150 Educational Measurement for the Classroom Teacher 2-3 s.h.
63:171 Problems in Physiological Medicine arr.
27:211 Biomechanics of Human Motion 4 s.h.
27:312 Selected Issues in Information Processing and in Motor Control 3 s.h.
31:131 Psychology of Learning 3 s.h.
111:160 Advanced Electroencephalography and Electrodiagnostic Procedures 2 s.h.
71:120 Drugs, Their Nature, Action, and Use 2-2 s.h.
101:305 Radiography for Physical Therapists 3 s.h.
101:355 Independent Study arr.
101:305 Research in Therapeutics arr.

Elective Courses
Students are encouraged to seek out appropriate elective courses.

Facilities
Personnel associated with the program have access to the physical therapy and orthopaedic-biomechanical laboratories, and to the biomechanics laboratory in the Biomechanics and Biomechanics Department of Engineering. These laboratories are equipped with instrumentation for force platforms, accelerometry, electromyography, eddy currents, force platforms, high-speed cameras, motion analyzers, accelerometers, force plates, and CO2 and CO2 analysis. Exercise ergometers, treadmills—needed to solve movement problems 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 orthopedists, engineers, neurology, cardiology, physiology, anatomy, and pediatrics; the master's degree program and the Physical Therapy Clinic interests in terms of conferences, teaching, patient care and research.

Financial Support
The program strives to provide financial assistance for all full-time students.

Admission
To be considered for admission to the master's degree program, the applicant must have a minimum of an advanced professional program of physical therapy, meet the admission requirements of the University of Iowa Graduate College, and pass the professional licensure examination for physical therapy. Clinical experience is desirable.

Deadlines for written applications are
February 15 and May 15.

Doctor of Philosophy Program
The physical therapy program coordinates a Ph.D. program for physical therapists. The program is problem-oriented, requiring an M.S. in physical therapy, and a master's degree. The purpose of the program is to provide opportunities for the student to become a specialist in the area of physical therapy specialization—musculos-
skeletale, neuromuscular, or cardiopulmonary.
The program emanates from the
Department of Physical Education—Field House (see College of Liberal Arts).
The program is designed to produce
professionals with advanced training for
positions of leadership in physical therapy
including graduate and professional educa-
tional programs in physical therapy.

Courses

[Missing information on course content]

121.10 Physical Interventions
121.11 Clinical Education and Rehabilitation
121.12 Clinical Education and Rehabilitation
121.13 Clinical Education and Rehabilitation
121.14 Clinical Education and Rehabilitation
121.15 Clinical Education and Rehabilitation
121.16 Clinical Education and Rehabilitation
121.17 Clinical Education and Rehabilitation
121.18 Clinical Education and Rehabilitation
121.19 Clinical Education and Rehabilitation
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121.55 Clinical Education and Rehabilitation
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121.57 Clinical Education and Rehabilitation
121.58 Clinical Education and Rehabilitation
121.59 Clinical Education and Rehabilitation
121.60 Clinical Education and Rehabilitation

Physician's Assistant Program

Program director: Dave Oliver

The physician's assistant is a person
decorated to collect historical and physical
information about a medical patient, organize
and present the data in such a way that the

The physician's assistant is also
entitled to perform some of the procedures,
and of coordinating the services of other
medical assistants, while
the physician's assistant functions under
the general supervision and responsibility of
the physician, under certain circumstances.
under defined rules, the physician's assistant may perform without a physician's supervision, and thus must be able to exercise independent judgament based on patient medical knowledge. The demand for physician's assistants is increasing in all types of health care settings, пенсиоли the role becomes more deeply defined.

The Iowa Program

The program at Iowa is approved by the American Medical Association's Joint Review Committee on Educational Programs for the Assistant to the Primary Care Physician, the Iowa Board of Medical Examiners and the Association of Physics' Assistant Programs. Completion of the program qualifies students for the M.B.A. in Science degree and/or the National Certification Examination for Primary Care Physician's Assistant. Successful completion of the National Certification Examination is a prerequisite to registration at Iowa.

The program at the University of Iowa emphasizes the practice of general medicine in a setting designed to foster the use of health care teams. In addition to opportunities with private practicing physicians, a network of primary care clinics is being developed in the state to serve communities with an integrated health care system. These family clinics will integrate the physician's assistant into the medical delivery team with physicians, health technicians, public health nurses, clinical nursing, and social service personnel.

The Physician's Assistant Program at 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 as it is taking where primary care is practiced.

The program is 24 months in length and is divided into three phases. The initial, didactic phase consists of seven months of courses organized in a number of subject sciences areas. Whenever appropriate, related subjects are integrated to provide sequential lecture, laboratory and clinical experiences. A seminar course specifically designed to the history and development of the physician's assistant profession is also offered during this second. The second phase, 6-month rotation 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 two, four, or six weeks' duration allow the students to apply the knowledge gained in the didactic and preclinical phases of the program and to develop professional skills through individual, supervised instruction. The rotations are designed to provide opportunities for each student to become proficient in the history-taking and physical examinations on patients with various conditions. Inpatient clinical training is provided by the University of Iowa Medical Center and affiliated hospitals, as well as the regional health care clinics at Moline, Davenport, Mason City, and Des Moines. Students participate in 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 the physician's assistant in this type of 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

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>71:125 Pharmacology for Health Sciences: Physician's Assistant</td>
<td>5 s.h.</td>
</tr>
<tr>
<td>50:105 Law and Medicine for Physician's Assistant Students</td>
<td>1 s.h.</td>
</tr>
<tr>
<td>65:111 Clinical Anatomy for Physician's Assistant Students</td>
<td>5 s.h.</td>
</tr>
<tr>
<td>61:119 Microbiology for Physician's Assistant Students</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>69:131 Principles of Human Pathology</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>69:130 Clinical Pathology for Physician's Assistant Students</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>72:184 Human Physiology for Physician's Assistant Students</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>99:194 Biochemistry for Physician's Assistant Students</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>117:101 Seminar for Physician's Assistant Students</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>50:121 Introduction to Clinical Medicine for Physician's Assistant Students</td>
<td>20 s.h.</td>
</tr>
</tbody>
</table>

Second Year

Required clinical rotations:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>73:150 Pediatrics for Physician's Assistant Students</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>73:155 General Surgery for Physician's Assistant Students</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>73:150 Internal Medicine for Physician's Assistant Students</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>115:158 Family Practice I for Physician's Assistant Students</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>115:156 Family Practice III for Physician's Assistant Students</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>66:100 Obstetrics and Gynecology for Physician's Assistant Students</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>73:100 Psychiatry for Physician's Assistant Student</td>
<td>4 s.h.</td>
</tr>
</tbody>
</table>

Elective clinical rotations, selected from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>70:102 Pulmonary Elective for Physician's Assistant Students</td>
<td></td>
</tr>
<tr>
<td>70:101 Emergency Room for Physician's Assistant Students</td>
<td></td>
</tr>
<tr>
<td>70:102 Orthopedics for Physician's Assistant Students</td>
<td></td>
</tr>
<tr>
<td>115:150 Family Practice Elective for Physician's Assistant Students</td>
<td></td>
</tr>
<tr>
<td>71:110 Internal Medicine Elective for Physician's Assistant Students</td>
<td></td>
</tr>
<tr>
<td>82:86 Dermatology for Physician's Assistant Students</td>
<td></td>
</tr>
<tr>
<td>74:61 Radiology for Physician's Assistant Students</td>
<td></td>
</tr>
<tr>
<td>75:110 Surgery Elective for Physician's Assistant Students</td>
<td></td>
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<tr>
<td>75:105 Rehabilitation Elective for Physician's Assistant Students</td>
<td></td>
</tr>
<tr>
<td>75:101 Urology Elective for Physician's Assistant Students</td>
<td></td>
</tr>
<tr>
<td>75:103 Anatomy Elective for Physician's Assistant Students</td>
<td></td>
</tr>
</tbody>
</table>

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 includes medical faculty members, training physicians in private practice, health care administrative personnel and students currently enrolled in the Program.
Expenses

In addition to tuition, room, board, books, supplies and other general University student expenses, students in the physician's assistant program are responsible for the purchase of their uniforms and diagnostic equipment. Microscopes are not included.

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 rhetoric, physical education, and the trollological-cultural, literary and social science core:

A complete introductory course in inorganic and organic chemistry; and

A complete introductory course at least one advanced course in zoology or animal biology.

It is 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 may automatically meet the Liberal Arts general education requirements.

The applicant must have achieved at least a 2.5 grade-point average (4.0) on his last 60 semester hours of college coursework undertaken. The admissions committee gives special attention to the applicant's performance in science courses.

Satisfaction of the baccalaureate admission requirements does not ensure acceptance into the Physician's Assistant Program. The admissions committee selects the applicants who meet the best qualifications. Applicants with previous health-care experience involving direct patient contact receive preferential consideration. The committee may require interviews with invited applicants.

Admission Procedures

A new class begins each June. Applications are accepted beginning one year in advance, ends January 15. Each applicant must complete the Physician's Assistant Program application and submit at least three letters of recommendation.

Course

1/12 (30) Semester for Physician's Assistant Students

0.5 a.c.

Clinical, surgical, and group project dealing with the history and development of physician's assistant profession. Open only to students in the physician's assistant program.

Physiology and Biophysics

Departmental Information

Professor Emeritus Francis M. Alford (Departmental.


The Department offers a program of graduate study leading to the Doctor of Philosophy degree. The program requires four or more years by completion. In addition, a two- year program leading to the Master of Science degree with thesis is available. The Department participates in the Medical Scientist Training Program (combined M.D.-Ph.D. program) conducted under the auspices of the Graduate College and the College of Medicine. It also takes part in the professional education of medical, dental, pharmacy, physical therapy, nursing, and physician's assistant students.

Graduate Study

The graduate program of the Department is designed to provide fundamental knowledge of the processes at cellular and organ levels as well as an opportunity for sophisticated study in major areas of physiology and biophysics. The program places strong emphasis on the development of modern research skills and their application in the conduct of original research.

The beginning student is guided and advised by the director of graduate studies, who in turn is planning a program of formal courses and graded research experience for the first two years. In addition to coursework in advanced general physiology and biophysics, selected formal study is offered in morphology, mammalian; medicine, musculature, respiratory, gastrointestinal, genital, oral, environmental, and exercise physiology, neurobiology, and technoscientific. Physiologists may also elect courses in other departments.

Upon completion of the required advanced coursework and acceptable performance on a comprehensive examination in physiology and related areas—usually after two years of study—the student denominates a full-time original research. This culminates in the writing of a dissertation embodying a significant contribution to scientific knowledge and the defense of the dissertation in a final oral examination.

All degree candidates are expected to have supervisory experiences as a classroom instructors and research assistants as part of their training.

Financial Aid

Full-time graduate students in the doctoral program are usually awarded training aid with continued support contingent upon satisfactory progress and the availability of funds.

Facilities

The Department of Physiology and Biophysics occupies two floors devoted to research and teaching in the Becton Sciences Building. It has additional laboratory facilities of the nearby Oakdale campus. In addition to specialized equipment in individual research laboratories, the Department has modern digital computers and computer graphics systems, electron microscope, automatic photoanalyzers, and a call culture facility, as well as darkroom and machine shop facilities. Through the first two years, graduate students are provided with an individual study space adjacent to the departmental reading room, which supplies resources available at the Health Sciences Library.

Admission

An applicant must complete undergraduate studies in an accredited institution and have an overall and science grade-point average
Courses

72.111 Introduction to Name Physiology 4 sc. Biologic concepts of human physiology. Prereq: Psychology 207, 217, 218, or equivalent, and consent of course director. Same as Bio 111. 60:15.

72.116 Endocrinology for Medical Students 5 sc. Core course in medical endocrinology. Five eight-week sessions. Prereq: Physiology 72.211 or equivalent, consent of course director. Same as Bio 116. 60:15.

72.121 Microbiology and Epidemiology 4 sc. Principles of microbiology and epidemiology: infections and the host. Prereq: Histology 72.181 and consent of course director. Same as Bio 121. 60:15.


72.125 Advanced Medical Direction 4 sc. Principles of medical direction and detailed treatment of organ systems and their role in disease. Prereq: Histology 72.181 and consent of course director. Same as Bio 125. 60:15.


sanitation, industrial hygiene, biometry, health services research, comparative medicine, agricultural medicine, and many other areas relevant to the health of communities. Many graduates of the Department have gone on to national and international achievement in public health.

In 1955 the Department sponsored the establishment 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 to 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 instruction. 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 Highway 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 while also linked to the clinical activities in the University Hospitals, is primarily oriented toward the community. Teaching and research are concerned with state epidemiologic methods, but his emphasis is on application to community health problems. Areas of specific interest include the organizational and delivery of health services, the descriptive, etiology and control of both acute communicable and chronic diseases as well as clinical epidemiology. There is a special chronosis within the Department on the epidemiology of cardiovascular diseases and others.

Examples of specific ongoing 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, surveys of health service utilization behaviors in Iowa communities, cancer screening programs, and activity through the Iowa State Cancer Registry and the Iowa Cancer Epidemiology Research Center (both based within the Department), the epidemiology of dermatologic disease associated with entomopathogens C. coccici, major participation in evaluations of health services research activities on a university-wide basis, the study of the health effects of pesticides, the study of agricultural workers accidents and traumas, and many others.

Consultation on epidemiologic problems is given widely in diverse areas of research and applied community activities.

The Masters program offers 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 admitted for the summer session.

Minimum GPA requirements are 2.7 bradmission to the master's program, 3.0 for the Ph.D. A composite combined GRE score of 800 (500 needed) is recommended.

The applicant must have an undergraduate major or course background in science or mathematics, depending on the student's proposed program of graduate study.

The applicant must furnish three letters of recommendation. Wherever possible, a personal interview is desirable.

Courses

6121 Health Sciences I 2 s.h.

6122 Health Sciences II 2 s.h.

6123 Environmental Health I 2 s.h.

6124 Environmental Health II 2 s.h.

6125 Environmental Health III 2 s.h.

6126 Environmental Health IV 2 s.h.

6127 Environmental Health V 2 s.h.

6128 Environmental Health VI 2 s.h.

6129 Environmental Health VII 2 s.h.

6130 Environmental Health VIII 2 s.h.

6131 Environmental Health IX 2 s.h.

6132 Environmental Health X 2 s.h.

6133 Environmental Health XI 2 s.h.

6134 Environmental Health XII 2 s.h.

6135 Environmental Health XIII 2 s.h.

6136 Environmental Health XIV 2 s.h.

6137 Environmental Health XV 2 s.h.

6138 Environmental Health XVI 2 s.h.

6139 Environmental Health XVII 2 s.h.

6140 Environmental Health XVIII 2 s.h.

6141 Environmental Health XIX 2 s.h.

6142 Environmental Health XX 2 s.h.

6143 Environmental Health XXI 2 s.h.

6144 Environmental Health XXII 2 s.h.

6145 Environmental Health XXIII 2 s.h.

6146 Environmental Health XXIV 2 s.h.

6147 Environmental Health XXV 2 s.h.

6148 Environmental Health XXVI 2 s.h.

6149 Environmental Health XXVII 2 s.h.

6150 Environmental Health XXVIII 2 s.h.

6151 Environmental Health XXIX 2 s.h.

6152 Environmental Health XXX 2 s.h.

6153 Environmental Health XXXI 2 s.h.

6154 Environmental Health XXXII 2 s.h.

6155 Environmental Health XXXIII 2 s.h.

6156 Environmental Health XXXIV 2 s.h.

6157 Environmental Health XXXV 2 s.h.

6158 Environmental Health XXXVI 2 s.h.

6159 Environmental Health XXXVII 2 s.h.

6160 Environmental Health XXXVIII 2 s.h.

6161 Environmental Health XXXIX 2 s.h.

6162 Environmental Health XL 2 s.h.

6163 Environmental Health XLI 2 s.h.

6164 Environmental Health XLII 2 s.h.

6165 Environmental Health XLIII 2 s.h.

6166 Environmental Health XLIV 2 s.h.

6167 Environmental Health XLV 2 s.h.

6168 Environmental Health XLVI 2 s.h.

6169 Environmental Health XLVII 2 s.h.

6170 Environmental Health XLVIII 2 s.h.

6171 Environmental Health XLIX 2 s.h.

6172 Environmental Health L 2 s.h.

6173 Environmental Health LI 2 s.h.

6174 Environmental Health LII 2 s.h.

6175 Environmental Health LIII 2 s.h.

6176 Environmental Health LIV 2 s.h.

6177 Environmental Health LV 2 s.h.

6178 Environmental Health LX 2 s.h.

6179 Environmental Health LXI 2 s.h.

6180 Environmental Health LXII 2 s.h.

6181 Environmental Health LXIII 2 s.h.

6182 Environmental Health LXIV 2 s.h.

6183 Environmental Health LXV 2 s.h.

6184 Environmental Health LXVI 2 s.h.

6185 Environmental Health LXVII 2 s.h.

6186 Environmental Health LXVIII 2 s.h.

6187 Environmental Health LXIX 2 s.h.

6188 Environmental Health LXX 2 s.h.

6189 Environmental Health LXXI 2 s.h.

6190 Environmental Health LXXII 2 s.h.

6191 Environmental Health LXXIII 2 s.h.

6192 Environmental Health LXXIV 2 s.h.

6193 Environmental Health LXXV 2 s.h.

6194 Environmental Health LXXVI 2 s.h.

6195 Environmental Health LXXVII 2 s.h.

6196 Environmental Health LXXVIII 2 s.h.

6197 Environmental Health LXXIX 2 s.h.

6198 Environmental Health LXXX 2 s.h.

6199 Environmental Health LXXXI 2 s.h.

6192 Environmental Health LXXXII 2 s.h.

6193 Environmental Health LXXXIII 2 s.h.

6194 Environmental Health LXXXIV 2 s.h.

6195 Environmental Health LXXXV 2 s.h.

6196 Environmental Health LXXXVI 2 s.h.

6197 Environmental Health LXXXVII 2 s.h.

6198 Environmental Health LXXXVIII 2 s.h.

6199 Environmental Health LXXXIX 2 s.h.

6200 Environmental Health XC 2 s.h.

6201 Environmental Health XCI 2 s.h.

6202 Environmental Health XCII 2 s.h.

6203 Environmental Health XCIII 2 s.h.

6204 Environmental Health XCIV 2 s.h.

6205 Environmental Health XCV 2 s.h.

6206 Environmental Health XCVI 2 s.h.

6207 Environmental Health XCVII 2 s.h.

6208 Environmental Health XCVIII 2 s.h.

6209 Environmental Health XCIX 2 s.h.

6210 Environmental Health XCI 2 s.h.

6211 Environmental Health XCII 2 s.h.

6212 Environmental Health XCIII 2 s.h.

6213 Environmental Health XCIIV 2 s.h.

6214 Environmental Health XCIV 2 s.h.

6215 Environmental Health XCV 2 s.h.

6216 Environmental Health XCVI 2 s.h.

6217 Environmental Health XCVII 2 s.h.

6218 Environmental Health XCVIII 2 s.h.

6219 Environmental Health XCIX 2 s.h.

6220 Environmental Health XCI 2 s.h.

6221 Environmental Health XCII 2 s.h.

6222 Environmental Health XCIII 2 s.h.

6223 Environmental Health XCIIV 2 s.h.

6224 Environmental Health XCIV 2 s.h.

6225 Environmental Health XCV 2 s.h.

6226 Environmental Health XCVI 2 s.h.

6227 Environmental Health XCVII 2 s.h.

6228 Environmental Health XCVIII 2 s.h.

6229 Environmental Health XCIX 2 s.h.

6230 Environmental Health XCI 2 s.h.

6231 Environmental Health XCII 2 s.h.

6232 Environmental Health XCIII 2 s.h.

6233 Environmental Health XCIIV 2 s.h.

6234 Environmental Health XCIV 2 s.h.

6235 Environmental Health XCV 2 s.h.

6236 Environmental Health XCVI 2 s.h.

6237 Environmental Health XCVII 2 s.h.

6238 Environmental Health XCVIII 2 s.h.

6239 Environmental Health XCIX 2 s.h.

6240 Environmental Health XCI 2 s.h.

6241 Environmental Health XCII 2 s.h.

6242 Environmental Health XCIII 2 s.h.
Association. Training experiences are available at the University of Iowa Hospitals and at the Iowa City Veterans Administration Hospital. Additional experiences are available at affiliated institutions: Broadwena Hospital in Des Moines, the Iowa Security Medical Facility at Oskaloosa, the Mid-Eastern Iowa Community Mental Health Center in Iowa City, and the Mental Health Institute at Independence, Iowa.

The Department offers an approved two-year residency in child psychiatry.

The Department staff is actively involved in genetic and family studies of psychiatric disorders, and includes a number of experts in the fields of genetic and biological psychiatry and neurochemistry.

A variety of opportunities is available for students and residents to participate in research. The basic science areas of neurochemistry, neuropharmacology, and electrophysiology offer additional opportunities to students and residents for special study and research. The clinical areas of psychology and child psychiatry and group psychotherapy also offer opportunities to a limited number of students for research and further study.

**Courses**

72:100 Psychiatry for Physician's Assistant Students
72:101 Psychiatry Elective for Physician's Assistant Students
72:228 Research in Psychiatry
72:231 Problems in Psychiatry

**Courses open only to medical students**

73:3 Clinical Psychiatry
73:30 Clinical I, II, III Hospital Psychiatry, Mental Health Institute, Independence, Iowa
73:32 Clinical III, IV Hospital Psychiatry
73:32 Psychiatric Disorders in Adults and Adolescents, Indianapolis, Indiana
73:33 Adult Psychiatry, Psychiatric Hospital
73:34 Hospital Psychiatry, UI Hospitals, Iowa City

72:30 Child Psychiatry, Psychiatric Hospital, Children's Service
72:36 Advanced Clinical I in Child Psychiatry
72:37 Advanced Clinical II in Child Psychiatry
72:39 Advanced Geriatrics, Psychiatric Hospital, Des Moines
72:40 Advanced Geriatrics in Adult Psychiatry

**Radiation Research Laboratory**

Program director (acting): James W. Oleson
Faculty: professors Richard L. DeSau, James W. Oleson, Edgar F. Halsey, Jr., associate professor Fred Hush-Fui Chang, James C.

**Undergraduate Programs**

There are no complete programs, but two courses, 77:105 Introductory Radiation Biology and 77:106 Environmental and Reproductive Health, are open to students of liberal arts or professional colleges. They should be of interest to students planning to enter 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. Ordinarily, the M.S. in this or a related field is required for admission to the Ph.D. program, but consideration will be given to other methods of qualifying.

After completion of the introductory course, the student may emphasize a particular aspect of the field. The details of the program are built around previous training, interests, abilities and career objectives.

Some students elect to emphasize training in physical aspects, such as radiobiological research, while others may be more interested 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 stressed, and the student has the opportunity to become familiar with many types of instruments and techniques. It is recommended that a candidate for the Ph.D. have a reading knowledge of scientific French or German and competence in biological statistics or computer programming before taking the final examination.

Students will have at least one semester of experience as a teaching assistant and at least one as a research assistant.

**Special Programs**

Postdoctoral training is available by arrangement with the program chairman and individual faculty members.
Transplantation and cancer, the Department participates actively with the Department of Microbiology.

The Department participates very actively in Introduction to Med/Pharm, which involves the entire second year of second-year medicine. The Department offers courses in diagnostic urology, radiologic urology, urologic oncology, and the entire field of urology. In the required third-year core-med course, the Department offers the basic principles and the fourth year. It offers advanced elective courses of intensive study in these areas.

Continuing education is offered throughout the year for urologic and family practitioners.

These activities are conducted by a dedicated staff whose members have intense interest in various areas, including pediatric urology, reproductive physiology, urologic oncology and prostatic diseases.

A special area, in which the Department has earned international recognition, has been created for the study of prostatic disease.

The urological laboratories are active and offer instruction in various areas of urology. Special courses in these areas are available on a voluntary basis.

**Courses**

**76:944:4114 Clinical Urology** 2.5 cr.

Involves intensive lecture course of study in anatomy, physiology, and urologic disease. Designed for resident, particularly for those residents who are interested in urology. Emphasis is placed on patients, exposure to individual and diagnostic urologic studies, through role in endoscopy, urology, Department and Radiology, abdominal cases reviews and home work in diagnostic urology, as well as resident personnel.

**76:180:4302 Advanced Urology** 2.5 cr.

Student becomes integral member of surgical and assistant medical teams and is exposed to the medical specialties of the Department. Aids and assists in specific areas of patient care. Case management and patient care.

**76:180:4302 Advanced Urology** 2.5 cr.

More advanced course in urology, focusing on specific areas of patient care and management. Aids and assists in specific areas of patient care. Case management and patient care.

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College of Nursing

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 graduates qualify to take the licensure examination required for practice as registered nurses.

Undergraduate Program

Man 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, home and foreign mission youth camps 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 in nursing is important—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 potentials, but to achieve the greatest measure of self-sufficiency in life.

The baccalaureate program is designed to provide both liberal and professional education. The basic 120-hour-semester hour program consists of 30 semester hours of general education courses, 40 semester hours of supportive prenursing courses and 50 semester hours of coursework in nursing. Enrollment in nursing courses during one summer session is required. A second summer session in a nursing core course is not guaranteed. 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 and nursing intervention, and are presented in progressive levels of complexity from the sophomore through the senior year. The curriculum reflects the current trend in health care delivery toward greater emphasis on nursing as a service rendered outside hospitals and other similar settings in the community. The curriculum provides for nursing electives and permits the selection of an area of 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 institutions in the two-year transfer plan include: Iowa State University, the University of Northern Iowa, and Upper Iowa, Briar Cliff, Morningstar, Loras, Luther, Clarke, Simpson, Wartburg and Ottumwa Heights colleges. Participating community colleges are located in Mason City, Marshalltown, Muscatine and Fort Dodge.

Completion of the two-year transfer sequence at a cooperating institution does not guarantee admission to the College of Nursing: admission standards for two-year transfers are the same as for all other College of Nursing applicants. Prospective two-year transfer students who want more information about this plan should contact the cooperating institution of their choice.

Registered Nurses
With some modifications, registered nurses who enroll in the baccalaureate program in nursing at Iowa complete the same liberal arts and sciences courses as students with previous nursing preparation. Registered nurses planning to enter the baccalaureate program at Iowa should obtain special information and advice from the College of Nursing.

Faculty Advisers
Advisers from the College are available to help prospective nursing students plan their programs, and each student in the College works with a faculty adviser.

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.

Expenses
Students pay the general University fees throughout the program, and purchase their own uniforms. The cost of a uniform order currently is about $65. Students must also purchase white shoes, a stethoscope and a watch with a full-weep second hand. Students usually 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 existence programs specifically for nursing students. For further information about financial assistance, write to the University Office of Student Financial Aids.

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 one-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; a student who has completed 18 semester hours of credit in English composition may complete the speech component after admission; non-University of Iowa students transferring 40 or more semester hours of credit are exempt from the rhetoric requirement);

- Mathematics—Two and one-half years of high school mathematics, or 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 (22M:11);

- 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); and

- Physics—High school physics or its equivalent (if taken at the college level, it may be included in the 30 semester hours required for admission).

Four semester hours in the historical-cultural core area and four in literature are required for graduation in nursing, and may be included in the 30 semester hours presented for admission.

Preclinical 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)
  - 4 s.h.
- Human Anatomy
  - 4 s.h.
- Human 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 committees selects those who appear to be best qualified. The committee may require personal interviews. A physical examination is required prior to first admission.
Application Deadlines
Applications must be received by March 15 for the fall semester and January 15 for the spring semester.

Master of Arts
The University of Iowa Master of Arts program in nursing is accredited by the National League for Nursing. To receive the degree, nursing students must complete the requirements of the curriculum described below. The curriculum was in the process of revision when this Catalog edition closed; to that reason, requirements are not described down to the level of specific courses. More detailed information may be requested from the Graduate Program Office in the College of Nursing.

Degree Requirements
This 45-semester-hour curriculum will ordinarily require four semesters of full-time study for completion. Students must maintain a 2.5 minimum grade-point average, and must successfully complete a written, comprehensive examination.

The master's degree curriculum is structured into five components:

Advanced Nursing Core (15 s.h.): Coursework in the areas of conceptual and theoretical foundations for nursing (6 s.h.), leadership in nursing practice (5 s.h.), methods of nursing research (3 s.h.), and a professional seminar (3 s.h.).

Nursing Specialization (9 s.h.): Allows students to build a special area of knowledge and practice which transcends beyond the advanced nursing core. Specialization may concentrate on the nursing of individuals—Child Health Nursing or Adult Health Nursing—or on the nursing of groups—Community/Family Health Nursing.

Students may focus their area of specialization through their choice of coursework and fieldwork experiences. For example, students selecting Adult Health Nursing as their area of specialization may choose experiences with patients in a long-term care facility, a mental health clinic, or a cardiac care unit. Students with unique career goals have the option of further modifying their plan of study under the direction of their academic advisor and with the approval of the graduate faculty.

Functional Skills (9 s.h.): Students may select among: administration, clinical practice, consultation, education, or research skills areas for additional study. Students existing to develop skills for a career in clinical practice will enroll for six hours of advanced clinical practice, which is written to courses required for their nursing specialization competency.

Supporting Courses (6 s.h.): Students may choose to do their supporting coursework in an area related to their clinical specialization or career role interest. Relevance of these courses to their plan of study will be approved by the academic advisor.

Theology (6 s.h.): All students are expected to write and successfully defend a thesis. This involves a systematic inquiry into a nursing problem to include such methodologies as historical research, case studies, analytical literature review, surveys, or experimental studies which meet the requirements of the Graduate College.

Admission as a Master's Candidate
Students should seek admission to the graduate program in nursing through direct application to the Graduate College of the University. Minimum requirements for admission to the Graduate College are: (1) completed application, (2) official transcript(s) from other institutions attended, (3) scores from the Aptitude Test of the Graduate Record Examination, (4) scores from the Test of English as a Foreign Language when appropriate, and (5) a minimum grade-point average of 2.5 for regular admission, 2.3 for conditional admission.

The College of Nursing additionally requires that the applicant:

Possess a baccalaureate degree with a major in nursing from a program accredited by the National League for Nursing;

Meet the legal requirements for the practice of nursing in at least one state in the United States;

Have an undergraduate grade-point average of 2.7 or a demonstrated ability to do graduate work for regular admission, a 2.5 for conditional admission;

Have recommendations from three persons familiar with his/her competency in the practice of nursing and potential for leadership and scholarship;

Submit the score from the Miller Analogies Test.

Have successfully completed a basic statistics course.

Applications for master's degree candidacy are reviewed once a year for fall/spring admission. The application deadline is March 15. By that time the admission committee will need all relevant admission materials, as listed above, in order to review the application. All applications for coursework are accepted by the Graduate College. However, the admission committee will not guarantee admission to the master's degree program until the student has been accepted and has completed all prerequisites.

Admission as a Professional Improvement Student
Some nurses may wish to take coursework at the University to fulfill the objective of professional or personal improvement only. Such individuals may request admission in the Professional Improvement category. This admission status allows the student to take some graduate courses in the College of Nursing without commitment to a degree objective.

Admission as a Professional Improvement student is handled through direct application. This includes submission of three recommendations and an academic transcript. Application deadlines are July 15 for fall admission in the fall semester, December 1 for spring admission in the spring semester, and May 1 for admission in the summer semester.

Once acceptance as a Professional Improvement student has met the prior bearing on acceptance as a master's candidate, Professional Improvement students are subject to the same requirements for coursework described in the preceding section if they wish to seek admission as a master's degree candidate.
Continuing Education

The College offers nonacademic, short-term programs and special projects for registered nurses. They are scheduled both on and off campus. Continuing education units (CEUs) are awarded for courses offering health care skills of one unit per ten hours of instruction.

Pediatric Nurse Practitioner Training Program

This four-month certificate program, offered jointly by the Department of Pediatrics of the College of Medicine and the College of Nursing, prepares registrared nurses to function as pediatric nurse practitioners in an expanded role on child health care teams. In clinics and in private pediactrician offices. Program requirements:

96/143 Seminar for Pediatric Nurse Practitioners 6 s.h.
96/100 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 under preceptors in the local setting. The program can be completed in one semester.

Admission

Applicants must be registered to practice professional nursing in Iowa (or be eligible for license by endorsement) and have one year of experience in pediatric 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. Conferences rooms, student lounges and meeting rooms are conveniently located. Research facilities in the building provide quick access to computerized calculating equipment and programable microcomputers.

Courses

Undergraduate

96/101 Introduction to Health and Health Care Services 3 s.h.

96/102 Nursing Development and Behavior 3 s.h.

96/103 Psychology 3 s.h.

96/104 Practice 3 s.h.

96/105 Primary Care Surveys 4 s.h.

96/106 Nursing in Children 3 s.h.

96/107 Nutrition 3 s.h.

100 Nursing 5 s.h.

102 Nursing 5 5 s.h.

103 Nursing 5 s.h.

104 Nursing 5 s.h.

105 Nursing 5 s.h.

106 Nursing 5 s.h.

107 Nursing 5 s.h.

108 Nursing 5 s.h.

109 Nursing 5 s.h.

110 Nursing 5 s.h.

111 Nursing 5 s.h.

112 Nursing 5 s.h.

113 Nursing 5 s.h.

114 Nursing 5 s.h.
The pharmaceutical sciences are concerned with the preparation and dispensing of medicinal products and monitoring their activity. The pharmacist is also trained to identify, analyze, select, combine and standardize these medicines, and serves his or her community as a prime source of information on health topics.

Although he or she performs a variety of tasks in and out of the community pharmacy, the pharmacist is basically a specialist in the science of drugs. He or she must understand their composition, chemical and physical properties, manufacture and uses, and activity in the normal individual as well as in the ill patient, and must be familiar with labels for the strength, purity and efficacy of drug products. The pharmacist is prepared to compound and dispense prescriptions written by health practitioners, who rely on the pharmacist for information about various drugs, their availability, activity, toxicity, contraindications, etc.

Nearly everyone is familiar with the community pharmacist and the pharmacy in which he or she practices. The size and type of practice may vary—community pharmacies may be large or small, operated by individuals or by corporations. The pharmacists who staff these pharmacies make up the majority of practitioners. Over 100,000 men and women practice in community pharmacies.

Another smaller group of pharmacists is employed in hospitals and clinics. The government also employs pharmacists in the Public Health Service, Veterans Administration, Food and Drug Administration, and armed forces.

Pharmaceutical industry is also an area where numerous pharmacists are employed. This includes pharmaceutical manufacturing, where pharmacists are found in various areas of research, development, manufacturing, control, marketing and advertising. In addition to these pharmacists, numerous others are employed in pharmaceutical sales. Pharmacy training is specifically valuable to these men and women who are responsible for acquainting physicians, dentists, veterinarians and other pharmacists with drug products.

In the United States more people are receiving total health care than ever before. This expansion of health care will continue. Young men and women in pharmacy will face new challenges, expanding responsibilities, and an ever-increasing growth of 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, pharmaceutical economics, clinical and hospital pharmacy.

The colleges of Liberal Arts, Business Administration, Law and Medicine contribute to the education of pharmacy students by providing instruction in the physical sciences, basic medical sciences, business, law and humanities.

Basically, the Bachelor of Science program in pharmacy consists of one year of pre-pharmacy study, taken in the College of Liberal Arts at Iowa or in any accredited community or liberal arts college, and four years of pharmacy studies.

It is possible to transfer into the College of Pharmacy after two years of college-level work as 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 University of Iowa College of Pharmacy is accredited by the American Council on Pharmaceutical Education. Graduates of the College are qualified to take the licensure examination given by the Iowa Board of Pharmacy Examiners.
The Professional Curriculum includes a minimum of 18 semester hours of electives; eight of these must be taken in the fourth professional year. By choosing appropriate electives, the student may focus on such special areas as clinical or hospital pharmacy or pregraduate study.

**The Professional Curriculum**

### First Year

- **First Semester**
  - 46:13 Pharmacy Math: 3 s.h.
  - 37:3 Principles of Animal Biology: 5 s.h.
  - 4:121 Organic Chemistry I: 3 s.h.
  - 4:101 Elementary Quantitative Analysis: 4 s.h.
  - Total: 16 s.h.

- **Second Semester**
  - 46:14 Pharmacy: Orientation: 2 s.h.
  - 66:1 Principles of Economics: 4 s.h.
  - 4:122 Organic Chemistry II: 3 s.h.
  - 4:141 Intermediate Chemistry Laboratory: 2 s.h.
  - * 60:102 Principles of Human Anatomy: 3 s.h.
  - **Elective: 3 s.h.
  - Total: 15 s.h.

*Also offered first semester for students on a 2-5 program only.*

*If 18 semester hours of electives are required, of which at least eight must be taken in the P-4 year.*

### Second Year

- **First Semester**
  - 46:23 Pharmacotherapeutics I: 4 s.h.
  - 99:105 Biochemistry for Pharmacy Students: 4 s.h.
  - 61:107 General Microbiology: 4 s.h.
  - *60:102 Principles of Human Anatomy: 3 s.h.
  - Total: 15 s.h.

- **Second Semester**
  - 46:24 Pharmacotherapeutics II: 4 s.h.
  - 46:22 Pharmacoeconomics: 4 s.h.
  - 46:128 Medicinal Chemistry: Natural Products: 4 s.h.
  - 71:102 Intermediate Physiology: 4 s.h.
  - Total: 16 s.h.

*May be taken in second semester of first year.*

### Third Year

- **First Semester**
  - 46:121 Medicinal Chemistry: Natural Products II: 4 s.h.
  - 69:503 Principles of Human Pathology: 4 s.h.
  - 71:101 Pharmacology for Health Sciences: Pharmacy: 5 s.h.
  - 48:206 Pharmaceutical Sociology/Economics: 3 s.h.
  - Total: 16 s.h.

- **Second Semester**
  - 46:132 Medicinal Chemistry: Natural Products III: 4 s.h.
  - 71:103 Pharmacology and Toxicology: 3 s.h.
  - 46:28 Pharmaceuticals III: 3 s.h.
  - 46:110 Clinical Pharmacy: Case Study: 3 s.h.
  - **Elective: 3 s.h.
  - Total: 16 s.h.

### Fourth Year

- **First Semester**
  - 46:41 Jurisprudence: 2 s.h.
  - 46:43 Pharmaceutical IV: 4 s.h.
  - *46:60 Clinical Pharmacy: Community Pharmacy: 2 s.h.
  - *46:61 Clinical Pharmacy: Drug Information: 2 s.h.
  - 46:111 Clinical Pharmacy: Therapeutics I: 2 s.h.
  - **Electives: 4-6 s.h.
  - Total: 16-18 s.h.

- **Second Semester**
  - *46:60 Clinical Pharmacy: 2 s.h.
  - 46:61 Clinical Pharmacy: Drug Information: 2 s.h.
  - 46:112 Clinical Pharmacy: Therapeutics II: 2 s.h.
  - **Electives: 6-8 s.h.
  - Total: 12-14 s.h.

*May be taken in either semester.*

**A minimum of 8 s.h. of electives must be taken in the P-4 year.*

### Professional Electives

- 46:47 Introduction to Research Methods: 3 s.h.
- 46:58 Community Pharmacy Operations: 2 s.h.
- 46:50 Pharmaceutical Chemistry: Drug Analysis: 3 s.h.

- 46:52 Senior Seminar: 1 s.h.
- 46:56 Non-Prescription Drugs: 2 s.h.
- 46:62 Clinical Pharmacy: Family Practice Therapeutics: 2 s.h.
- 46:63 Clinical Pharmacy: Pediatric Therapeutics: 2 s.h.
- 46:64 Hospital Pharmacy: 2 s.h.
- 46:65 Clinical Pharmacy: Surgical Therapeutics: 3 s.h.
- 46:69 Clinical Pharmacy: Elective Clerkship: 1-4 s.h.
- 46:101 Pharmacy Projects: 1-3 s.h.
- 46:103 Physical Pharmacy: 3 s.h.
- 46:104 Biopharmaceutics: 3 s.h.
- 46:105 Industrial Pharmacy Survey: 2-3 s.h.
- 46:107 Hospital Pharmacy: Survey: 3 s.h.
- 46:108 Hospital Pharmacy: Survey: 3 s.h.
- 46:114 Admitted Clinical Pharmacy: 3 s.h.
- 46:120 Clinical Pharmacy: Psychopharmacology: 4 s.h.
- 46:136 Introduction to Natural Product Research: 1-2 s.h.
- 46:154 Communications Skills for Pharmacists: 3 s.h.

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, maximum schedule, second-grade-only option, waiver or substitution of course, cancellation of registration, drop date and correspondence study, see the "College of Pharmacy" section in the current Schedule of Courses.

### Admission

The college-level work outlined below is the minimum academic requirement for admis- sion 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 equiva- lent to analytic geometry or a higher mathematics course. Physics: a one- or two-semester course in basic physics (at Iowa, 29.8 Basic Physical). A one-semester 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 recommenda-
tion of the Undergraduate Admissions Committee and the approval of the Dean.

The applicant must have earned a 2.0 (A=4) cumulative grade-point average on all college work attempted.

Fulfillment of the specific requirements for admission listed above does not ensure admission to the College of Pharmacy. From applicants meeting the requirements, the admissions committee of the College selects the best qualified applicants.

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 baccalaureate degree in pharmacy for two years of 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 must expect to be enrolled for at least three years in the College of Pharmacy. A minimum grade of C is required for work applied toward transfer to 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 pharmacology, medicinal chemistry, natural products, and pharmaceutical

socioeconomics. A Master of Science degree is available in clinical hospital pharmacy.

Advanced study in the pharmaceutical sciences prepares students for opportuni-
ties in research, teaching and administra-
tive positions in the pharmaceutical, chemical and agricultural chemical indus-
tries, in colleges and universities, in government agencies and in a number of health-related institutions and organizations.

The application deadline and the require-
ments 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, an auditorium and library resources center, the building houses well-equipped separate laboratories and a greenhouse for instruction at the under-
graduates 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 undergraduates and graduate students have the opportunity to learn methods of large-scale pharmaceutical product-
development.

In the Clinical Pharmacy program, students have the opportunity to monitor drug therapy in hospitals and non-hospitalized pa-
tients, under the supervision of clinical instructors in pharmacy and medicine. Among the various clinical electives in which the students are involved are many areas of the University and Veterans Administration hospitals, the family practice clinics at Oakdale, Mechanicentre, and Williamsburg; the Iowa Medical Specialty, Inc., Iowa City Mercy Hospital; Cedars Neipsic 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

Pharmaceutics

4513 Pharmacy: Math 3.0 h. Application of systems of weights and measures and mathematical calculations involved in pharmaceutical calculations and practice includes introductory lectures in calculus and application to pharmaceutical problems.

4514 Pharmacy: Statistics 3.0 h. Data, organization and development of the science and art of the profession of pharmacy.

4523 Pharmacology I 3.0 h. Pharmacology and laboratory: application of physical and chemical tests to the formulation and preparation of dosage forms, including solutions, capsules and suppositories. Prerequisites: 4513, 11101.

4524 Pharmacology II 3.0 h. Pharamacology and laboratory: application of physical and chemical tests to the formulation and preparation of dosage forms, including solutions, capsules and suppositories. Prerequisites: 4513, 11101.

4528 Pharmacokinetics 3.0 h. Principles of the study of the absorption, distribution, metabolism and excretion of therapeutic agents and their metabolites. Prerequisites: 4513, 4523; prerequisites or corequisites: 4514.

4543 Pharmacodynamics IV 4.0 h. Drug actions on particular cell types and on specific sites. Prerequisites: 4513, 4523, 11101.

Graduate

Pharmaceutics

4511 Pharmacy: Projects 3.0 h. Basic and applied research projects of pharmaceutical significance beyond 4513 through 4514 to be taken during graduate study.

4513 Physical Pharmacy 3.0 h. Physical aspects of the evaluation, protection, and stabilization of pharmaceutical systems. Prerequisites: 4513; corequisites: 4523.

4514 Chemical Pharmacy 3.0 h. Chemical aspects of drug absorption and systemic action of drugs. Prerequisites: 4513, 4514; corequisites: 4523.

4515 Industrial Pharmacy Survey 2.0 h. A survey of the organization, principles and practices of pharmacy in the commercial, industrial, hospital, hospital laboratory and military fields. Prerequisite: 4513.

4522 Pharmacy: Selected Topics 3.0 h. Current advances and continuing research in specific areas of pharmacy.

4526 Ability of Pharmacists to d 3.0 h. A survey of the profession of pharmacy. The student will be responsible for the development of a study proposal. Prerequisite: 4513.

4528 Stability of Pharmaceuticals 3.0 h. Modern techniques for the study of drugs, including the determination of the stability of pharmaceuticals. Prerequisites: 4513, 4523.

4543 Pharmacodynamics IV 2.0 h. A survey of the pharmacodynamics of drugs in man. Prerequisites: 4513, 4523, 4524.

4555 Seminar on Pharmacology 1.5 h. Seminar topics will be determined by the faculty. Prerequisite: 4523.

4560 Seminar on Clinical Pharmacy 1.5 h. Seminar topics will be determined by the faculty. Prerequisite: 4523.

4565 Seminar on Experimental Pharmacology 1.5 h. Seminar topics will be determined by the faculty. Prerequisite: 4523.

4570 Seminar in Professional Issues 1.5 h. Seminar topics will be determined by the faculty. Prerequisite: 4523.

4575 Seminar in Professional Ethics 1.5 h. Seminar topics will be determined by the faculty. Prerequisite: 4523.
48.118 Clinical Pharmacy: Antidotes

2 h.
In-depth discussion of selected topics dealing with clinical use of antidotal agents. Opened Spring semester. Prerequisites: 48.113, 71.101.

48.120 Clinical Pharmacy: Hypertension

4 h.
Lecture and laboratory course concerned with national use of psychotropic drugs in treatment of psychiatric disorders. Prerequisite: P4 or graduate standing.

Graduate Clinical-Hospital Pharmacy

48.137 Hospital Pharmacy: Survey

3 h.
Hospital as an out-patient health care system: financing, planning, equipment, organization, administration. Written or oral presentation on a topic of a drug use. Prerequisites: 48.112, P4 standing.

48.141 Hospital Pharmacy: Formularies

3 h.
Formulation of departmental drug policies; preparation of drug compounding; control of pharmacy service by medical order. Prerequisites: 48.112, P4 standing.

48.204 Hospital Pharmacy: Formulation

3 h.
Application of principles of pharmacology and pharmacy to the problems of modern hospital pharmacy practice. Prerequisite: 48.112 or equivalent.

48.205 Hospital Pharmacy: Formulation

2 h.
Technics and practical aspects of modern hospital pharmacy practice. Prerequisite: 48.114.

48.294 Hospital Pharmacy: Formulation

3 h.
Technics and practical aspects of modern hospital pharmacy practice. Prerequisite: 48.114.

48.294 Hospital Pharmacy: Formulation

2 h.
Technics and practical aspects of modern hospital pharmacy practice. Prerequisite: 48.114.

48.294 Hospital Pharmacy: Formulation

2 h.
Technics and practical aspects of modern hospital pharmacy practice. Prerequisite: 48.114.
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 to the people of Iowa by carrying out to every part of the State its knowledge, the ideals and the spirit of the several departments and colleges of the University by bringing the University generally into direct contact with the citizen." The Division's organizational services include:

Center for Credit Programs

Correspondence Courses

Correspondence courses are available for credit toward a degree, for preparation for special occupations or for skill improvement. Resident students at The University of Iowa must obtain the permission of the dean of their college to enroll in correspondence courses for degree credit.

Correspondence study is offered in accounting, American studies, anthropology, business administration, chemistry, classics, economics, education, English, French, geography, Greek, history, home economics, journalism, Latin, letters, mathematics, music, physical education, police science, political science, psychology, religion, social work, sociology, Spanish and speech and dramatic art.

There is a $5 enrollment fee. The course fees are $2 per semester hour. Fees are payable at the time of registration. A catalog including procedures and enrollment forms may be obtained from the Correspondence Study, 4W400 East Hall.

The University, in cooperation with the federal Department of Defense, offers many correspondence courses to men and women in the armed services. Personnel should visit their education officer. Veterans may enroll for correspondence courses concurrently with other academic study under Public Law 92-540. Veterans are referred to Veterans Affairs Office of the University.

Off-Campus Classes

The Division offers off-campus 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 30 enrollies. For information, write to the Center for Credit Programs, 4W400 East Hall, The University of Iowa.

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 Saturday and Evening Class Program, 4W400 East Hall, The University of Iowa.

Bachelor of Liberal Studies Degree

The Bachelor of Liberal Studies degree is designed to serve adults who cannot attend college as full-time, on-campus students. Credit toward the degree, which is awarded by the College of Liberal Arts, may be earned through correspondence study, Saturday and Evening classes, off-campus courses, and newspaper, radio, and television courses. For information, write to the Center for Credit Programs, 4W400 East Hall, The University of Iowa.

Education Tests

Standardized tests and scales developed at The University of Iowa are published and distributed on a nonprofit basis to schools, public agencies and industrial firms in Iowa.
and throughout the nation. In addition, many other widely-used, commercially-produced standardized tests and scales with established national reputations are carried in stock for distribution. Buyers order test needs from this one source to save time and transportation costs. Orders received for items regularly carried in stock are usually shipped within 24 hours. For catalogs, write to Education Tests, CIB 601 East Hall, The University of Iowa.

Center for Conferences and Institutes

The Center serves as the principal agency of the University for developing, coordinating, and conducting nonprofit 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 30,000 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, helps in the achievement of the educational objectives specified for each training meeting.

The Director of Conferences is responsible for the approving and conducting or coordinating all continuing institutes, short courses and similar nonprofit programs held in the Iowa Memorial Union for other than on-campus student groups. All members of this faculty and staff who plan University conferences and other University-related group functions to be held on campus (or in the Iowa City/Coronado community) are expected to schedule these activities through the Center for Conference 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 noncredit, 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 KSTU-FM serve the needs and interests of the people of eastern Iowa with an 18 hours/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 programming materials to a national network of more than 180 non-commercial radio stations. The main studios and offices are located in 3000 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 those governments. Services of the Institute are available to state and local government agencies and to citizens groups interested in civic affairs.

The Institute has a full-time research and training staff. Through the Institute, other resources of the University are applied to help people faced by Iowa public officials. The Institute also works in close cooperation with organizations of public officials such as the League of Iowa Municipalities and the Iowa State Association of Counties.

The Institute provides:

In-service training and continuing education services to public personnel, primarily 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 task forces, are available to school boards dealing with major concerns of state and local governments.

Bureau of Police Science

The Bureau offers a series of law enforcement courses through correspondence study. In addition, the Bureau offers a variety of services to law enforcement agencies, including entrance and promotional examinations, general administrative or specialized surveys, and specialized training programs. It also carries out research programs in areas of public safety. Upon request by law enforcement agencies, the Bureau conducts personnel examinations, administrative surveys and record surveys.

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 teachers improve their teaching about politics at the high school level. These programs are planned in cooperation with leaders of the legally-recognized political parties of the state and college teachers and administrators.

Iowa Community Service and Continuing Education Program

The Division of Continuing Education serves as administrative and fiscal agent for the Iowa Community Service and Continuing Education Program, a cooperative state-federal program to provide the continuous education services of colleges and universities toward solving community problems and meeting continuing education needs of adults. A state advisory council assists in identifying community problems and continuing education needs, recommends appropriate institutional activities and approves
CONTINUING EDUCATION

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Office of Community College Affairs

The Office of Community College Affairs (OCCA), which is closely aligned with the College of Education, is the liaison office between the University and Iowa's area community and vocational-technical colleges. In activities involving discipline articulation and student follow-up, OCCA extends its services to the private two- and four-year colleges in the state. The Office serves these educational systems and their respective personnel by providing these services:

- Provides liaison between the University and statewide professional educator associations as well as selected regional and national organizations, and conducts relevant research;
- Articulates university-community college faculty, student, institutional policy, and curricular;
- Provides in-service training opportunities for community college personnel, and assists to the College of Education and other University colleges and departments in providing degree programs for community college personnel leading to state certification.
- Participates in state, regional, and national approval, accreditation and consultation activities; and
- Provides regular information, consultation, and coordination services for specialized groupings of community college personnel.

Iowa Lakeside Laboratory

The Division has general administrative supervision of the Iowa Lakeside Laboratory, a summer laboratory for the biological sciences on Lake Okoboji. A cooperative program in teaching and research is carried on under the auspices of Iowa State University, University of Northern Iowa, and The University of Iowa. Two terms of five weeks each are held during June, July, and August. Facilities for year-round research also are available. For information, write to the Division of Continuing Education.

Mec bride 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. Developments in the area to date include provision of an access road, water supply, electric power, maintenance storage facilities, a boathouse and sailing facilities, field archery course, facilities for handicapped persons and prone areas.

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 faculty and staff in the solution of instructional problems related to the design of learning systems and facilities, and the selection and production of educational media.

Media Library

The Audiovisual Library provides a major collection of 16mm instructional films, available on campus without charge, for instruction and curriculum-related activities, and for rental to off-campus requestors. Smaller collections of audio and video recordings, filmscripts, and slides, plus facilities for student or faculty utilization, are also available. Catalogs of these collections are available upon request. A reference collection of materials from other sources is also maintained.

Campus Service

Audiovisual equipment available without charge for instructional use includes film, slide, filmstrip, opaque and overhead projectors; portable projection screens; audio-tape recorders; record players; portable public-address systems; and display devices (exhibits, easels, boards).

There is a nominal charge for projectionist service and for equipment requested for conferences and off-campus use. Repair service is available at a nominal charge for all AV equipment including TV systems.

Med ia Production

Professional services, facilities, and equipment are available to produce original software in all media.

- Graphics—design, layout, paste-up, illustrations, charts, graphs, lettering, etc.
- Audio—recording, editing, duplication, transcription services
- Motion picture—scripts, cinematography, editing, complete processing and printing laboratory
- Photography—portraits, passports, slide shows, filmscript, 35mm slide duplication, complete printing and processing services
- Television—video production, color and black & white (1 inch and cassette), systems design, equipment maintenance; portapak rental
- Fabrication—design and construction of displays, specialized audiovisual equipment and furniture

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.
Administrative Officers

State Board of Regents

The University of Iowa, Iowa State University of Science and Technology, the University of Northern Iowa, the Iowa State and Eight-Day School Systems, and the Iowa School for the Blind are governed by the State Board of Regents, consisting of nine members. The board membership is as follows:

President: Mary Louisa Parker, Marion
Roy V. Magid, Davenport
Constance Berlin, Des Moines
E.J. Bonnenkamp, Des Moines
Perry J. Farren, Cedar Rapids
Donald Greene, Council Bluffs
Harry S. Hatfield, Iowa City
Peter J. Rosenstiel, Davenport
Executive secretary: N. Wayne Nickay

Central Administration

President: William L. Boy
Vice-president for Academic Affairs and Dean of the Faculties: Mary Brown

Vice-president for Administrative Services: William Shively
Director of Development and Research: Dean of the Graduate College: Dean C. Schmitz
Vice-president for Health and University Services: Edward H. Jennings
Vice-president for Student Services and Dean of Academic Affairs: Philip D. Helms

Academic Affairs

Vice-president and Dean of the Faculties: Mary Brown

College of Business Administration
Dean: J. Robert Zecher
Program Director for Labor Management: Dean Fabian
Business Admissions: Helene P. Tinnitus
Industrial Relations Institute Director: Anthony J. Serrano
Center for Economic Research: Ronald M. Serrano
Center for Insurance Education and Research: Ronald L. Young

College of Dentistry
Dean: James H. Mccall

College of Education
Dean: Howard L. Jones

College of Engineering
Dean: Robert G. Hering

Graduate College
Dean: Dwayne L. Reams

College of Law
Dean: H. William Harris

College of Liberal Arts
Dean: Howard L. Linn

School of Art and Art History Director: Wallis Heideman
School of Journalism Director: Joseph E. Smith
School of Languages Director: Joseph E. Smith
School of Law Director: Joseph E. Smith
School of Music Director: Joseph E. Smith
School of Music Director: Joseph E. Smith
School of Religion Director: Joseph E. Smith
School of Social Work Director: Joseph E. Smith

College of Medicine
Dean: John W. Evans

College of Nursing
Dean: Evelyn Barr

College of Pharmacy
Dean: Dale E. Moulden

Division of Continuing Education
Dean: Robert F. Ray

Division of Development and Research
Dean: Robert F. Ray

Division of Sponsored Programs
Director: Margaret C. W. Heideman

Office of Project Development
Director: John D. Mehlke

Institute of Child Behavior and Development
Director: Gerald S. Solomon

Libraries

Head of Library Administration: Leslie W. Culver

Summer Session
Acting Director: Sue R. Reesor

Educational Development and Research

Vice-presidents: Dean C. Schmitz
Advisory Vice-president: William J. Farrell

Institute of Hydromechanics

Director: Ronald R. Schwartz
Academic Personnel

Abbas, Paul J., B.S. Massachusetts Institute of Technology 1969, Ph.D. John Hopkins 1974; assistant professor, Speech Pathology and Audiology, 1974
Abbout, Francois, Baccalauréat Christian Brothers' Schools (Egypt) 1948, PHS Cairo (Egypt) 1949, M.B.B.Ch.Air Shams (Egypt) 1950; professor, Internal Medicine and Physiology and Biophysics, 1967 (1968)
Aki, Charles M., B.A. Morningide 1925, M.B.-W. Nebraska 1934; assistant professor, School of Social Work, 1968 (1973)
Abrams, Michael E., B.A. Luther 1953, M.D. Iowa 1957, clinical assistant professor, Family Practice, 1972 (1977)
Acedo, Alejandro, D.S. Loyola (Louisiana) 1929, D.D.S. 1936; associate professor, Oral Surgery, 1976
Aikin, Judith P., B.A. Oregon 1966, M.A. 1969, Ph.D. California (Berkeley) 1974; assistant professor, German, 1975
Alcorn, Marie G., B.S. Iowa State 1948, M.D. Creighton 1949; clinical assistant professor, Family Practice, 1975
Allen, D., Elizabeth, B.A. Lawrence 1941, M.A. Mills 1945, Ph.D. W.E. Stoe 1960; assistant professor, Home Economics, 1953
Alexander, Bruce, B.S. Drake 1974, Pharm.D. Minnesota 1978; clinical assistant professor, Pharmacology, 1976
Alexander, Michael R., B.S. University of the Pacific 1965, M.S. 1971; clinical assistant professor, Pharmacology, 1974
Ari, N. Adel, M.B., B.Ch. Cairo (Egypt) 1960; assistant professor, Surgery, 1977
Alley, Lewis E., B.S.Ed. Central Missouri State Teachers 1935, M.S. Wisconsin 1941, Ph.D. Iowa 1945; professor, Physical Education, 1942 (1959)
Green, Melita S., B.A. Yale 1939, Ph.D. 1942; professor, 1943 (1947) associate professor, Internal Medicine and Biochemistry, 1971 (1975)
Green, Clairene, Dipl. Nursing (Scotland) 1955, B.A. Iowa 1960, Ph.D. 1976; assistant professor, Physical Education and Dance, 1971
Griff, Stanley C., B.A. Coe 1935, M.A. Wyoming 1934, Ph.D. Idaho 1971; adjunct professor, Geology, 1975
Gronbeck, Bruce E., M.A. Concordia 1963, M.A. Iowa 1968, Ph.D. 1970; associate professor, Speech and Dramatic Art, 1974
Groses, Erwin G., B.S. Wisconsin 1917, M.S. 1919, Ph.D. 1921, M.D. 1930; professor emeritus, Pharmacology, 1939 (1960)
Guilbert, Sisto, M.D. Santa Torasa (Philippines) 1951; clinical assistant professor, Pediatrics, 1975
Guiffrey, J. Kelby, B.S. Loyola (Louisiana) 1958, M.D. Wisconsin 1960, Ph.D. 1961; professor, Pharmacy, 1964 (1972)
Heath, John, B.A. Iowa 1939, M.A. 1941, Ph.D. 1941; professor, Secondary Education, 1941 (1954)
Heyn, Oscar A., B.S. Poli, Chile 1963, M.A. Iowa 1972, Ph.D. Maryland 1977; assistant professor, Spanish and Portuguese, 1974
Hill, Margaret S., B.A. Smith 1958, M.F.A. Iowa 1951; associate professor, Speech and Dramatic Art, 1973 (1978)
Hillberg, Sannie F., B.A. Augsotana 1973, Ph.D. Iowa 1976; adjunct professor, Sociology, 1978
Holms, Nicholas S., M.D. Budapest (Hungary) 1947; professor, Anatomy and Physiology and Biophysics, 1950 (1958)
Hammond, Henry E., B.S. Iowa 1939, M.D. 1949; professor, Internal Medicine, 1949 (1959)
Hammon, Harold L., D.D.S. Loyola University Chicago 1950, M.S. Chicago 1957; associate professor, Oral Pathology and Diagnosis, 1967 (1972)
Hanken, Richard R., M.D. Iowa 1969; clinical assistant professor, Internal Medicine, 1973 (1977)
Hanley, John M., B.A. Western Montana 1967, M.A. Montana 1972; instructor, Speech Pathology and Audiology, 1977
Hansen, Jankele W., M.D. Iowa 1969; associate professor, Pediatrics, 1970
Hansen, Gary E., D.D.S. Iowa 1952; assistant professor, Removable Prosthetics and Orthodontics, 1967
Hendel, Robert C., B.S. Iowa 1953, M.D. 1957; professor, Internal Medicine, 1964 (1965)
Torres, Alfonso, R.B. Sorano (Mexico) 1962; M.D. National University of Mexico 1963; PhD assistant professor, Pediatrics, 1977.


Townsend, P.J., B.S. Missouri (Kansas City) 1971; adjunct instructor, Renewable Resource, 1976.


Tynan, Stafford W., Ph.D., B.A. Richmond 1912; Ph.D. Cornell 1922; professor emeritus, Physics and Astronomy, 1923 (1965).


Walters, John C., B.A. Harvard 1929, M.A. 1947, Ph.D. 1952; professor; Political Science, 1956
Walker, James A., D.D.S. Iowa 1945; adjunct instructor; Preventive and Community Dentistry, 1975
Walser, John A., B.S. Iowa 1972; clinical instructor; Pharmacy, 1973
Wall, Kevin P., B.S. London (England) 1994, M.S. Union 1971; Ph.D. Pennsylvania; Polytechnic 1976; assistant professor; Materials Engineering, 1975
Wallace, Peter D., B.S. Grinnell 1965, M.D. Iowa 1969; clinical assistant professor; Pediatrics, 1974
Wallace, Robert B., B.S.M. Northeastern 1951, M.D. 1956; M.Sc. State University of New York (Buffalo) 1970; associate professor, Preventive Medicine and Environmental Health and Internal Medicine, 1971
Wang, Wei-Hsien, B.S. National Taiwan 1964, M.A. Idaho 1971; assistant professor, Botany, 1975
Wien, Lawrence A., B.S. Iowa 1958, M.S. M.S. 1957, Ph.D. 1965; assistant professor; Biochemistry, 1957-1962
Werner, Emory D., B.S. Iowa 1927, M.D. 1930; professor emeritus, Pathology, 1960-1973
Westbury, Charles A., B.A. Iowa 1937, M.D. 1940; clinical assistant professor, Family Practice, 1977
Wexler, Jerry J., M.S. Texas 1962, M.A. Michigan-Ann Arbor 1971; Ph.D. 1974; assistant professor, Early Childhood and Elementary Education
Wexner, Stanley M., B.S. Brown 1925, Ph.D. Minnesota 1935; professor, Chemistry, 1944-1955
Wibell, John Y., B.A. California State (Los Angeles) 1958, Ph.D. California (Berkeley) 1977; associate professor, Spanish and Portuguese, 1978
Weete, Theodore C., B.S. Wisconsin 1953, M.S. 1957, Ph.D. 1972; assistant professor, Psychology, 1972
Welsh, James B., A.M. Vanderbilt 1963, Ph.D. 1968; assistant professor; Psychology, 1977
Welsh, James S., B.A. Vassar 1968, Ph.D. Theology 1972; adjunct assistant professor; Religion, 1977
Welser, John M., B.S. Michigan State 1947, M.D. 1952; associate professor; Internal Medicine, 1957-1978
Weisbrodt, Daniel, B.A. Cambridge (England) 1956; assistant professor, English, 1957
Wellard, Arthur J., B.S. Wisconsin State Teachers (LaCrosse) 1929, M.A. Iowa 1935; clinical assistant professor, Physical Education, 1937-1946
Wheeler, John C., B.S. Virginia Polytechnic 1948; M.S. Minnesota 1956; clinical assistant professor, Pharmacy, 1976
Wetz, David C., B.S. Lorain 1949, D.D.S. Iowa 1974; adjunct assistant professor; Pediatrics, 1977
West, James R., B.A. Wichita State 1903, Ph.D. California (Irvine) 1975; assistant professor, Anatomy, 1976
Weston, David W., B.A. Iowa 1957, M.D. 1962; assistant professor, Obstetrics and Gynecology, 1971
Wexman, Frederick L., B.S. Western Ill. 1953, M.E. Iowa 1940, B.S.L. 1946; professor, School of Library Science, 1969-1972
White, Carl W., B.S. Nebraska 1951, M.D. 1954; associate professor, Internal Medicine, 1962-1978
Whitehead, Carol, B.A. California (Riverside) 1966, M.A. 1973, Ph.D. 1974; assistant professor, Sociology and American Studies Program, 1973


The following is extracted from the Board of Regents section of the Iowa Administrative Code. The Code is updated by the Code Editor on a biannually basis. The reader should consult the Code for any changes made to the Code subsequent to March 15, 1978.

Residence

720-1A(252) Classification of residents and nonresidents for admission and fee purposes.

1.41(1) General.

Students enrolled at one of the three state institutions shall be classified as resident or nonresident for admission, fee and other purposes as provided by the Board. The decision shall be based on the student’s intentions and his subsequent permanent location, including other relevant information. The registrar is authorized to require such written documentation, affidavits, verifications or other evidence necessary to establish the domicile of a student, including proof of emancipation, adoption, transfer of custody or appointment of a guardian. The burden of establishing that a student is exempt from paying tuition shall rest with the student. Nonresident status may be removed after appeal to the Board.

For purposes of resident and nonresident classification, the term “residence” as herein used shall mean legal residence of a student and shall mean the permanent home of the student if such home is the permanent home of the student’s parents or other legal custodian. The term “nonresident” in this classification applies to a student whose permanent place of residence is outside the state. The term “fee” as herein used applies to tuition, books and other charges associated with attendance at the institution.

1.4(2) Residence for tuition purposes.

Rules regarding residence for tuition, fee and tuition purposes are generally divided into two categories—those that apply to students who are under the age of eighteen years and those that apply to students over the age of eighteen years. The following rules apply to students under eighteen years of age. Certain rules within the state mean adoption of the state as a fixed permanent home and having personal presence within the state. These rules 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 extraordinary cases where emancipation, as here defined, has not occurred. The residence of the minor shall be the residence of the parent or parents from whom the child is supported. The residence of the parent or parents from whom the child is supported shall be determined by the benefits received by the child. If the child and the parent have separate places of residence, the minor shall take the residence of the parent whose benefits he has received. If the parent has received benefits only if they were available when the child was present, the provider of the benefits at the time shall be considered to be the residence of the minor. The determination of the residence of the minor shall be based on the following factors: (1) the length of time the minor resided with the parent; (2) the nature of the relationship between the minor and the parent; (3) the extent to which the child benefited from the relationship; (4) the age of the child; (5) the age of the parent; and (6) any other factor the court deems relevant. The determination of the residence of the minor shall be based on the above factors.

1.4(4) Students over eighteen years of age.

A student eighteen years of age or older is considered to be a resident for the purposes of this classification. Students who are not residents at the time of seeking admission may become residents if they have been residents for at least thirty days prior to their last date of residence.

1.4(5) General facts.

The status of a student for tuition, fee and tuition purposes as a resident or nonresident shall be determined under these rules. The determination of the classification of a tuition, fee and tuition purposes in the student shall be based on the following factors: (1) the length of time the student resided with the parent; (2) the nature of the relationship between the student and the parent; (3) the extent to which the student benefited from the relationship; (4) the age of the student; (5) the age of the parent; and (6) any other factor the court deems relevant. The determination of the classification of the student shall be based on the above factors.

The definition of "resident" for tuition, fee and tuition purposes is not automatically established in law, therefore, the classification of a resident or nonresident shall not continue to be classified as residents as long as such resident is
Admission Rules Common to the Three State Universities

720-1.1(262) Admission of freshman students.

The student who has attended the senior high school in this state and also any additional requirements for the institution, school or college of his choice. He must submit a formal application for admission to the director of admissions in the school in which he is interested. The director of admissions in the school in which he is interested must submit the application to the director of admissions of the institution, school or college of his choice. The director of admissions of the institution, school or college of his choice must forward the application to the director of admissions of the institution, school or college of his choice.

720-1.2(262) Admission of undergraduate students by transfer from other colleges.

1.2(1) Students from accredited colleges and universities.

Transcripts of record are submitted by the the Director of Admissions at the College of the University of Iowa. The Director of Admissions at the College of the University of Iowa shall review the transcript of record and determine the courses that shall be credited to the student's record. The Director of Admissions at the College of the University of Iowa shall forward the transcript of record to the Registrar of the College of the University of Iowa. The Registrar of the College of the University of Iowa shall grant credit for courses that are determined to be acceptable by the Registrar of the College of the University of Iowa.

1.2(2) Students from nonaccredited colleges.

A college or university may elect to award credit for courses completed at a nonaccredited college or university. The college or university must have a policy in place that outlines the criteria for awarding credit for courses completed at a nonaccredited college or university. The college or university must also have a process in place for evaluating the quality and significance of the coursework completed at a nonaccredited college or university.

720-1.3(262) Application deadlines.

Applications for admission must be submitted by the deadline date. The deadline date for fall admission is October 15. The deadline date for spring admission is April 1. The deadline date for summer admission is May 1. The deadline date for transfer admission is June 1.

1.3(1) Exceptions.

Students who are foreign students or students who are transferring from a foreign college or university must meet additional requirements. Students who are foreign students must provide proof of English proficiency and provide a letter of recommendation from a professor at the foreign college or university.

Supplemental Specific Rules for The University of Iowa

The following requirements are in addition to those given in the University of Iowa regulations and policies for admission to the University of Iowa.

720-2.1(262) Formal application for admission.

All applicants to any college of The University of Iowa are required to complete a formal application for admission with the required additional information and supporting materials as required by the director of admissions. Students may be questioned if they have been awarded an admission statement by the director of admissions.

720-2.2(262) Part-time rule.

All unmarried freshmen and sophomore students are required, as a condition of registration at the University of Iowa, to remain on campus as full-time students. Part-time students are defined as students who are enrolled for fewer than 12 credit hours per term, and are required to be in residence during the fall term. Failure of a student to comply with the provisions of this rule may result in suspension from the University of Iowa for failure to maintain satisfactory academic standards.
2.3(2) Requirements for admission.

For admission to the college of business administration an applicant must have:

a. Completed specific course work as prescribed by the faculty of the college.

b. Achieved satisfactory scores on the university's required entrance examinations.

c. Achieved a satisfactory grade-point average on all college-level course work reviewed by the administration committee of the college, and on four prior academic recommendations of the committee. Each student may be granted conditional or probationary admission.

Fulfillment of the minimum requirements listed above, however, does not assure admission to the college of business administration. From those applicants who meet the minimum requirements, the admissions committee will select the applicants who, in their judgment, appear to be best qualified.

File March 25, 1969; amended March 10, 1968

720-2.4(262) College of Dentistry.

2.4(1) Application for admission.

Address all inquiries regarding admission to the Director of Admissions, University of Iowa.

Applicants are urged to apply as early as possible, since this will give the admissions committee more time to devote to each applicant. Closing dates for receiving applications will be announced in advance of the opening date of any semester.

Applicants in addition to the usual requirements for admission must have:

a. "University" means the state University of Iowa or any affiliated or related institution of the university system.

b. "Student" means the student designated by the University.

c. "Advisor" means the student advisor designated by the University.

d. "Program" means any undergraduate program of study at the University.

2.4(2) Advanced standing.

Applicants for advanced standing are honored on individual cases.

File January 17, amended January 17, 1979

720-2.5(262) College of Engineering

2.5(1) Admission of freshman students.

The applicant must submit a completed application and satisfactorily pass the entrance examination provided as part of the university's academic entrance examination program. In addition, the student must achieve a satisfactory grade-point average on all college-level course work reviewed by the administration committee of the college. Final admission will be determined by the college's administration committee.

Each applicant must have a grade-point average on all college-level course work reviewed by the administration committee of the college. Final admission will be determined by the college's administration committee.

2.5(2) Admission of transfer students.

Applications for admission to the College of Engineering should be submitted to the director of admissions.

Applications for admission to the College of Engineering should be submitted to the director of admissions.

Applications for admission to the College of Engineering should be submitted to the director of admissions.

Applications for admission to the College of Engineering should be submitted to the director of admissions.
2.8(3) Unclassified students.

Applicants for admission to the College of Medicine who are not candidates for a degree but who desire to register for nondegree study may be admitted upon the written recommendation of the dean and the approval of the dean of the college. The following requirements must be met:

1. A completed application for admission.
2. A statement of the nature and purpose of the proposed study.
3. A letter of recommendation from a member of the faculty of the college of medicine who shall be responsible for the student's academic performance.
4. A copy of the student's most recent official transcripts from all colleges and universities attended.
5. A personal interview with the dean or a designated representative of the college.
6. A completed application for enrollment.

Applicants accepted for admission will be notified promptly.

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 semester average is acceptable, be admitted and granted advanced standing toward the degree of Bachelor of Science in Pharmacy.

2.10(6) College of Education.

Applicants for admission to the College of Education must meet the requirements listed in 2.10(3) and 2.10(4) and have a minimum semester average of 3.0 in the last 40 semester hours of college work, including the equivalent of 2 hours in English composition and 2 hours in mathematics and 2 hours in physical education or an equivalent number of credits in any other subject.
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