Catalog of
The University of Iowa

1972-74

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

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**University Calendar**

**SUMMER SESSION**

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

1973
June 4, Monday
June 2, Tuesday
July 4, Wednesday
July 27, Friday
July 30, Monday
August 24, Friday

**FIRST SEMESTER**

Beginning of Registration, 1 p.m.
Opening of classes, 7:30 a.m.
University holiday; offices closed
Homecoming; classes suspended except for
class meeting on Saturdays only
Beginning of Thanksgiving recess, 10 p.m.
University holiday; offices closed
Resumption of classes, 7:30 a.m.
Close of First Semester classes, 10 p.m.
Beginning of Examination Week, 7:30 a.m.
Close of Examination Week
University holiday; offices closed
University holiday; offices closed

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

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

**SECOND SEMESTER**

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

1972-73
January 11, Thursday
January 15, Monday
February 25, Sunday
March 9, Friday
March 10, Saturday
March 19, Monday
May 4, Friday
May 8, Tuesday
May 16, Wednesday
May 25, Friday
May 28, Monday

1973-74
January 10, Thursday
January 14, Monday
February 25, Saturday
March 8, Friday
March 9, Saturday
March 18, Monday
May 3, Friday
May 7, Tuesday
May 15, Wednesday
May 24, Friday
May 27, Monday

**SUMMER SESSION**

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

1974
June 3, Monday
June 4, Tuesday
July 4, Thursday
July 26, Friday
July 29, Monday
August 23, Friday
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The First Iowa General Assembly chartered The University of Iowa February 23, 1847, just two months after Iowa's admission to statehood.

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

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

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

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

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

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

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

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

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

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

The Faculty

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

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

Accreditation and Associations

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

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

- **Colleges**
  - Business Administration—American Association of Collegiate Schools of Business
  - Dentistry—American Dental Association
  - Engineering—Engineering Council for Professional Development
  - Law—American Bar Association
  - Association of American Law Schools

- **Schools**
  - Medicine—Liaison Committee on Medical Education (representing the American Medical Association and the Association of American Medical Colleges)
  - Nursing—National League for Nursing
  - Pharmacy—American Council on Pharmaceutical Education
  - Teacher Education—National Council for Accreditation of Teacher Education

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

Departments
Chemistry—American Chemical Society
Dental Hygiene—American Dental Association, Council on Dental Education
Physical Therapy—American Medical Association in collabora-
tion with the American Physical Therapy Association
Psychology—American Psychological Association
Speech Pathology and Audiology—American Speech and Hear-
ing Association

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

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

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

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

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

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

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

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

College of Dentistry
February 15—First Semester only

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

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

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

College of Medicine
January 1—First Semester only

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

Dental Hygiene Program
April 1—First Semester only

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

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

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

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

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

It is advisable that anyone interested in applying for undergraduate admission at Iowa complete the American College Tests during the fall prior to his or her anticipated registration.

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

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

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

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

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

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

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

<table>
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<tr>
<th>Program</th>
<th>Resident Full</th>
<th>Resident Half</th>
<th>Resident Quarter</th>
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<tr>
<td></td>
<td>9 (or more)</td>
<td>5–8</td>
<td>1–4</td>
</tr>
<tr>
<td></td>
<td>sem. hrs.</td>
<td>sem. hrs.</td>
<td>sem. hrs.</td>
</tr>
<tr>
<td>Business Administration</td>
<td>$310</td>
<td>$198</td>
<td>$123</td>
</tr>
<tr>
<td>Dentistry</td>
<td>435</td>
<td>273</td>
<td>165</td>
</tr>
<tr>
<td>Engineering</td>
<td>310</td>
<td>198</td>
<td>123</td>
</tr>
<tr>
<td>Graduate School</td>
<td>355</td>
<td>225</td>
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<tr>
<td>Law</td>
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<td>225</td>
<td>138</td>
</tr>
<tr>
<td>Liberal Arts</td>
<td>310</td>
<td>198</td>
<td>123</td>
</tr>
</tbody>
</table>
General Information

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

Nonresident

Full Half Quarter

(9 or more) (5-8) (1-4)

Business Administration 525 387 228
Denistry 800 492 287
Dentistry (see "College of Liberal Arts" and "Graduate Col-
lege")

Engineering 625 387 228
Graduate 600 272 220
Law 635 393 232
Liberal Arts 625 387 228
Medicine 800 492 287
Nursing 625 387 228
Pharmacy 625 387 228

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

The University reserves the right to change tuition and fees, with the approval of the Iowa Board of Regents.

General fees provide for the student’s use of Iowa Memorial Union facilities; of libraries, laboratories and gymnasium; fee admission to minor sports events and to student-faculty concerts and plays; admission to major sports events and to performances by visiting stage and concert artists, at reduced rates; subscriptions to the student newspaper, The Daily Iowan, on a housing unit basis; certain student hospital services; and other activities and services as announced.

Procedure for Payment of Student Accounts

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

Foreign Students

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

Admission Standards

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

Test of English as a Foreign Language (TOEFL)

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

Admission Information

Prospective foreign students are advised to write to the Univer-
sity one year in advance of proposed enrollment. The first letter should include date of birth, educational background including dates and names of degrees earned, schools attended, examina-
tions taken and their results, the semester of proposed enroll-
ment, the desired field of study and the degree objective.

When appropriate, an application for admission will be for-
warded by the Office of Admissions and Registrar. Materials are normally sent by surface mail, unless the applicant includes International Postal Reply coupons which allow the University to return the application by air mail.

As an admitted foreign student is sent by air mail an admission letter, arrival information and the Certificate of Eligibility (Im-
migration Form I-30 or DSP-60). They are forms required by U.S. Consulates to grant visas to enter the U.S.

Each semester an undergraduate foreign student must carry a minimum of 12 semester hours. A graduate foreign student must take a minimum of nine semester hours. Each course varies in the value of semester hours, but the average is usually three semester hours per course.

Costs

Student living costs are difficult to estimate, because prices change and individual requirements differ. An overall figure for tuition, room and board, books, clothing, laundry, recreation and other expenses is estimated at $3,600 (U.S.) for 12 months for a single student.

Scholarships, Fellowships and Loans

Few scholarships and fellowships are available to foreign stu-
dents at The University of Iowa. Those that exist are awarded by the student’s department and usually require the student to do some teaching or research work. The admission application allows the foreign student to indicate a desire to compete for such scholarships or fellowships.

Loan funds for emergencies may be available only if there is evidence of repayment possibility. Additional information about financial aid is available from the Office of U.S. embassies, consulates or U.S. Information Service libraries.
General Information

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

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

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

Numbering of Courses
Each course in the regular University curriculum has an identifying number, preceded by the number of the college, department or program in which the course is administered. For example "461" is the code for the course numbered 11 in the Department of Chemistry (4), entitled "Elementary Quantitative Analysis." Usually, course numbers below 100 designate "Principally for Undergraduates;" numbers 100 to 199 designate courses "For Undergraduates and Graduates" and numbers 200 and above designate courses "Principally for Graduates." The University reserves the right to alter its course offerings without further notice.

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

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

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

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

91 College of Law

College of Liberal Arts
0 Nondepartmental Courses
1E Art Education
1M Art History
1S Art Studio
2 Botany
3 Speech Pathology and Audiology
4 Chemistry
5 Child Behavior and Development
8 English
9 French
10 Basic Skills Courses
11 Core Courses
12 Geology
13 German
14 Greek
16 History
17 Home Economics
18 Italian
19 Journalism
20 Latin
21 Library Science
22C Computer Science
22D Mathematics
22S Statistics
General Information

23 Military Science  
23A Aerospace Military Studies  
24 Museum Training  
25 Music  
26 Philosophy  
27 Physical Education for Men  
28 Physical Education for Women  
29 Physics and Astronomy  
30 Political Science  
31 Psychology  
32 Religion  
33 European Literature and Thought  
34 Sociology  
35 Spanish  
36 Speech and Dramatic Art  
36B Broadcasting  
36C Radio, TV, Film  
37 Theatre  
37 Zoology  
38 Portuguese  
39 Chinese and Oriental Studies  
39J Japanese  
41 Russian  
42 Social Work  
44 Geography  
45 American Civilization  
48 Comparative Literature  
50 Hospital and Health Administration  
50B General Science  
98 Social Studies  
102 Urban and Regional Planning  
103 Linguistics  
104 Recreation Education  
108 School of Letters  

113 Anthropology  

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

**College of Nursing**  

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

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

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

Fair Housing Policy

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

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

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

University Residence Halls

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

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

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

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

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

Graduate Students

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

Applications and Assignment

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

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

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

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

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

Rates—The basic rate for University residence hall housing for the 1971-72 academic year was $1.14 for a double or $1.295 for a triple room, with full board. Rates for the several available graduate accommodations are subject to change annually.

Married Student Housing

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

Hokwey Drive Apartments

192 two-bedroom units; unfurnished, except for electric range and refrigerator. Units rented for $105 per month for the 1971-72 academic year. Rent does not include electricity and telephone.
Housing

Hawkeye Court Apartments
216 one-bedroom units, 288 two-bedroom units, unfurnished, except for electric range and refrigerator. Each unit has its own gas furnace and electric water heater. Rates for 1972-73 are $92.00 for one bedroom, $112 for two bedrooms, unfurnished. Rent does not include gas, electricity or telephone.

Parklawn Apartments
Forty one-bedroom and 1½ efficiency units, all unfurnished, except for electric range and refrigerator. Each unit has its own gas heater. Rates for 1972-73 are $87.00 for one-bedroom units, $70.00 for efficiency units. Rent does not include gas, electricity or telephone.

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

An advance payment of $25.00 is required for all apartments.

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

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

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

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

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

Sororities
The 15 national sororities active at Iowa are Alpha Chi Omega, Alpha Delta Pi, Alpha Epsilon Phi, Alpha Gamma Delta, Alpha Phi, Alpha Xi Delta, Chi Omega, Delta Delta Delta, Delta Gamma, Delta Zeta, Gamma Phi Beta, Kappa Alpha Theta, Kappa Kappa Gamma, Phi Beta Phi and Zeta Tau Alpha.
Admissions, Records and Convocations
The Dean of Admissions and Records is responsible for coordinating the services of the Office of Admissions and the Registrar’s Office, maintaining enrollment profiles and developing enrollment projections, conducting commencements and convolution ceremonies, and publishing the University Catalog.

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

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

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

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

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

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

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

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

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

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

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

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

Dental Service
The University of Iowa College of Dentistry is primarily a teach-
ing clinic, the purpose of which is to educate and train future dentists. Students are accorded the same opportunity for treatment as all other patients.

It should be emphasized that the College of Dentistry is not a part of the University Student Health Service and does not render service under the student health hospitalization fund. Fees are established for all services rendered and may be paid by either cash or Master Charge.

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

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

Student Development Center
The Student Development Center is a general counseling agency and clearinghouse of information for students. Students wanting any kind of information or having problems of a social or extra-curricular nature can get help from this office, either directly or by referral.

Staff members work with individuals and with student groups and organizations, including fraternities, sororities and residence hall governing bodies.

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

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

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

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

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

The Action Studies Program
Patterned after the "free university" concept, the Action Studies Program provides a vehicle for immediate response to student demand for courses too current or too experimental for initiation as part of the regular University curriculum. Students may coordinate as well as participate in most ASAP courses. Courses taken for no credit are free. Regular tuition is charged for credit courses.
Administrative Staff
Dean Leah W. Darrow
University Librarian: Dale M. Beres
Assistant University Librarian: Richard M. Kabat
Assistant University Librarian: Wayne Robey
Administrative Assistant: Lowell D. Dilworth
Bibliographer: Frank S. Hanlin
Assistant Director Emeritus: Grace Van Norman

General Facilities
The University's Main Library and its 14 departmental libraries house a total of more than 1.5 million volumes. About half of the collection is in the Main Library where capacity has been doubled by an addition occupied in 1972. This additional space includes new facilities for the School of Library Science, a new undergraduate library on the second floor containing reader services and a separate collection of some 50,000 books selected for use by graduate students, and a new and enlarged study area for graduate students on the fourth and fifth floors.

The Law Library, containing approximately 144,000 volumes, is one of the strongest university law libraries in the Midwest. The Art Library contains approximately 24,000 volumes; Botany-Chemistry, 47,000; Business Administration, 11,000; Dentistry, 10,600; Education-Psychology, 94,500; Engineering, 56,700; Geology, 20,400; Library Science, 8,000; Mathematics, 24,700; Medical, 92,800; Music, 41,000; Pharmacy, 10,000; Physics, 22,900; Speech Pathology, 4,290; and Zoology, 20,750.

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

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

The Humanities Area Filer contains full data on a sample of societies throughout the world, and is designed to facilitate comparative studies of social and cultural behavior.

The University's Leila H. Hear Collection, brought together by Luther A. Brewer of Cedar Rapids, Iowa, is considered one of the most complete in existence. It contains 2,385 separate volumes, 1,924 manuscripts and manuscript letters written by Hunt or to him by his many famous literary friends, almost 100 association volumes, and nearly 600 editions of Hunt's writings. The Mark Twain Memorial Collection contains approximately 3,700 volumes, of which 3,000 were bequeathed to the University by Mrs. Ranney in memory of her husband, formerly a lecturer in the College of Medicine. The collection is particularly rich in first editions, including many superb bindings made especially for Mrs. Ranney.

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

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

The Burleigh-Lincoln Collection, gathered by Judge James W. Bollinger of Davenport, Iowa, consists of about 4,420 books and pamphlets devoted to Abraham Lincoln. The collection is one of the best libraries of Lincoln in the United States. A number of items in it concern John Wilkes Booth and the trial of his fellow conspirators; while another large group of books contains reminiscences of people who knew Lincoln. Lastly, a number of brochures relating to Iowa and the Civil War period have been added to the collection, developing yet another phase of Lincoln's period in American history.

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

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

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

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

The Manuscripts Collection includes more than 5,300 individually cataloged letters or manuscript items of English and American authors or historical figures, primarily of the nineteenth and twentieth centuries, in addition to 215 inventoried collections of personal papers and correspondence files relating to midwestern economic, political and agricultural history.

The Map Collection contains 56,800 maps, 57,953 indexed serial photographs, and 1,342 atlases, gazetteers and related reference items.
The University Archives preserve materials relating to the history of the University. The collection of University publications from 1853 to 1920, originally assembled by Dean Amos N. Currier, is today supplemented by 450 file drawers of correspondence and records; approximately 1,750 shelf-feet of records, papers and publications; and an extensive collection of photographs dating back to 1911.

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

Staff

Acquisitions: Barbara K. Gasdirt, Head; E. Ann Ford; Kathleen A. Wachol.

Circulation: David A. Aamoth; Ruth E. Christ; Mary G. Clark; Kathy Ann Edwards; Karen A. Fischer; Judith K. Groedel; Vivian E. Hickman; Karl K. Kahler; Tatjana Lorkovic; George P. Mullally; Mary E. Nolte; Rosemary E. Ross; Antoinette M. Park; Emeritus; Yong Kyh Nyl Mei; Emeritus.

Circulation: David D. Hudson, Head; Linda M. Safarow; Browning Room Librarian; Liliana M. Sega, Reserved Books Librarian; Chris Hinton, Head Emeritus.

Government Publications: Carolyn W. Kohler, Head; Mary Lee Blieser; William H. Hunkins; Mary R. Mehlhop; Reference: Julia Bartlett, Head; Frank J. Allen; Rebecca L. Johnson; Dorothy M. Kastel; Laura A. Martin; Keith A. Rayfield; Jean S. Schaal; Ada M. Stoffel.

Societies: Helen S. Clark, Head; Jim E. Cole; Mary E. Horton; Evelyn S. Murphy; Anne D. Roberts; Charlene E. Sole.

Special Collections: Francis J. Pahkka, Head; Richard S. Green; Robert A. McCown; Earl M. Rogers; Irene Stedl, Emeritus.

Departmental Libraries: Art; Harlan L. Siffrd; Botany; Chemistry; Pauline L. Mann; Business Administration; Peter J. Hartford; Dental; Margaret R. Jameson; Education-Psychology; Anne G. Evans; Sharon B. Morin; Jane M. Phillips; Geology; Vera J. Bacon; Library Science; Karen S. Hildebrand; Mathematics; Marjorie G. Wilbur; Medical; Robert V. C order; Edwin A. Holton; Julie Van Berg; Music; Rita B. Benson; Elizabeth L. McWilliams; Pharmacy; Sandra Baltesch; Physics and Zoology; Jack B. Dickey; Speech Pathology; Carol Vogt.
College of Liberal Arts

Administrative Staff
Dean: Dewey Bernard Shutt
Associate Dean and Director, Advisory Office: Hugh Kelle
Assistant Dean: Sherwood D. Tuttle
Director of Honors: Rhodes D'Antoni
Associate Director of Honor: J. Richard Wiens

The primary function of the College of Liberal Arts is to provide a liberal education—to encourage the student in the fullest possible development of his or her intellectual abilities, his or her capacities as a person and as a member of society. While the long-range goal is that of producing an intellectually, spiritually, physically, emotionally and aesthetically well-rounded individual, the College seeks to accomplish this primarily by emphasis on intellectual achievement. Through its curriculum and related activities, the College assists the student in the continued development of fundamental intellectual skills, particularly in writing, reading, speaking and quantitative thinking. It guides the student toward a mastery of reading ideas, significant facts and methods of work in such fields as the sciences, social sciences, language and literature, fine arts, history, and philosophy. It aids the student in the development of a resourceful and independent mind, the ability to use as well as to accumulate knowledge. Finally, it attempts to provide the student with experiences which will be conducive to the development of strength of character and a sense of personal responsibility.

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

The College awards bachelor's degrees in these areas:

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

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

Chemical Physics
Comparative Literature
Computer Science
Cultural Anthropology and Linguistics
Hospital and Health Administration
Law Enforcement and Correction
Library Science
Museum Training
Nuclear Science
Science Education
Speech Pathology and Audiology
Statistics
Urban and Regional Planning
Schools and Divisions
There are seven schools and two divisions within the College of Liberal Arts.

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

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

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

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

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

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

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

Advanced Placement
Under the Advanced Placement Program of the College Entrance Examination Board, a high school senior may take comprehensive examination examinations in a number of subjects.

The College of Liberal Arts grants college credit and, where appropriate, advanced placement of students who pass these examinations. For information, write to the College Entrance Examination Board, 475 Riverside Drive, New York City 10027.

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

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

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

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

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

The Preprofessional Program
Up to 30 semester hours of credit earned in another college of the University will be accepted toward the bachelor's degree by the College of Liberal Arts, provided all specific requirements for the degree have been met, including the requirements for a major in some department or area of concentration. This makes it possible for the student who enters the college of Medicine or Dentistry, or the medical technology, physical therapy or dental hygiene programs, for which a bachelor's degree is a prerequisite, to obtain a bachelor's degree from the College of Liberal Arts upon successful completion of one academic year in the professional college or program.

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

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

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

Entering Freshmen
An applicant seeking admission as an entering freshman must have the high school from which he or she graduated provide a certificate of high school credits, including a complete statement of high school record, class rank, scores on standardized tests and certification of graduation. An applicant may be tentatively admitted after he or she has completed the junior year in high school, but admission will not be final until receipt of the final transcript and certification of high school graduation. A graduate of an approved Iowa high school who has the proper subject-matter background, is in the upper one-half of his or her graduating class and meets specific curricular requirements, will generally be admitted upon certification of graduation. An applicant who is not in the upper one-half of his or her graduating class may be required to take special examinations, and, after a review by the administration of the admissions officer, may be admitted unconditionally, admitted on probation, required to enroll for a trial period during a preceding summer session or denied admission.

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

A graduate of a nonapproved high school must submit all data required above, and must take examinations which demonstrate his or her general competence to do college work. An applicant who is not a high school graduate must submit all data, 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 recommendation contained in the current issue of the Report of Credit Given by Educational Institutions published by the American Association of Collegiate Registrars and Admissions Officers will be followed for schools not regionally accredited.

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

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

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

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

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

Students from Nonaccredited Colleges
The College may refuse to recognize credit from a nonaccredited college or may admit the applicant on a provisional basis and provide a means for the validation of core or of the credit. The validation period shall not be less than one semester and will be extended for a further semester by the College if necessary to the student to demonstrate the student's knowledge in the subjects covered. Each student from a nonaccredited college is considered on his or her merits, and admission or rejection is at the discretion of the admissions officer.

Students who transfer from junior colleges must earn a minimum of 62 semester hours in the College of Liberal Arts to qualify for a degree, regardless of the number of transfer credits they have earned. A maximum of 30 semester hours earned through correspondence
The College of Liberal Arts

degree or extension study can be applied toward an undergraduate degree.

Academic Standards
Marking System
The University of Iowa uses the following marking system:

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

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

Classification of Students

Freshman—Less than 28 semester hours
Sophomore—28 to 55 semester hours
Junior—36 to 89 semester hours
Senior—90 or more semester hours

Scholarship Requirements

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

Minimum semester and cumulative grade-point requirements for good standing in the College of Liberal Arts are 1.5 for freshmen, 1.625 for sophomores, 1.75 for juniors, 1.9 for seniors.

Entering freshmen admitted on probation must attain good standing during the first semester. Freshmen who are admitted in good standing but fail to maintain it during the first semester must regain it during the second semester. Upperclassmen may be allowed two successive semesters on probation. Students who are dropped from the College for the first time may apply for readmission after one year. Those who are dropped a second time are not eligible to apply for readmission until five years later.

Graduation Requirements

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

The Basic Program

The College of Liberal Arts curriculum requires that before graduation all students attain acceptable levels of performance in:

- Basic skills
  - Rhetoric (reading, writing, speaking)
  - Physical education
- Mathematics
- Core areas (literature, social science, natural science, historical-cultural)
- Foreign language
- Area of concentration (including work in the major field and such courses in related fields as are advised by the major department)

Methods by Which Requirements May Be Satisfied

Rhetoric

All students must register at their first enrollment for rhetoric, as assigned on the Admission Statement, and must continue to enroll each semester until the proficiency tests are passed. Students assigned to 105-103 Rhetoric may attempt the lecture and speech tests before taking the course but must enroll for 103 until they learn the results of the tests. By satisfactorily passing these tests, a student can earn up to four semester hours of credit.

Transfer students have the option of satisfying the rhetoric requirement by submitting, at the time of entrance, eight semester hours of credit earned in another institution in a course comparable to the rhetoric course at The University of Iowa; by transferring six semester hours of credit in speech from another institution of good standing; by transferring six semester hours in English composition and either completing two semester hours of credit in speech (362-23) at the University or satisfactorily passing the speech test for transfer students. A student who transfers less than six semester hours in composition must register for the rhetoric course indicated on his or her Admission Statement and must continue until the requirement is satisfied. Students transferring 40 semester hours or more of advanced standing are exempt from the rhetoric requirement. A maximum of eight semester hours of credit in the Rhetoric Program will be counted toward the baccalaureate degree.

Physical Skills

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

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

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

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

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

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

Historical-Cultural, Natural Science, Social Science and Literature Core Requirements
All students must meet the core requirements by satisfactorily completing at least four in any one of the core-five-hour core courses offered in the core area. However, with the approval of the department, students may be excused from the core requirement in the major area. The student may also be excused by earning eight or more semester hours of credit in approved departmental courses in one or more departments in the area where such courses are offered, or by achieving a satisfactory score on a comprehensive examination in the core subject.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Requirements for graduation with distinction are:

<table>
<thead>
<tr>
<th>Pharmacy</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest distinction</td>
<td>3.75 + GPA highest 2%</td>
</tr>
<tr>
<td>High distinction</td>
<td>3.50-3.74 next highest 5%</td>
</tr>
<tr>
<td>Distinction</td>
<td>3.25-3.49 next highest 5%</td>
</tr>
</tbody>
</table>

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

To be eligible for graduation with honors, the student must
be recommended by his or her major department and be ap-
bproved by the Honors Council and the dean of the College.

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

Basic Skills

The Rhetoric Program

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

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

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

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

193 Rhetoric Main Course
Instruction in reading, writing and speaking.

193 Rhetoric Main Course
Correlation of 193, prerequisite, 191

193 Rhetoric Advanced Course
An intensive, one-semester course in reading, writing and speaking; open only to
those who give evidence of sufficient high degree of competence in the Rhetoric
Advanced Writing.

Open to any student needing intensive help but not only freshmen recommended by
their rhetoric instructors, but apprenticeship interested in writing who feel they
need intensive study. Freshman Honors students and students who meet the above
criteria should consult the Honors Council for information about the Honors
Program (students who used more writing experience that they may receive in
English for Foreign Students 193/19).

Physical Education Skills

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

The instructional program in physical education skills pro-
vides for a wide variety of activities, including physical condi-
tioning, archery, badminton, bowling, canoeing, canoeing, and
swimming, diving, fencing, frisbee, golf, gymnastics, handball,
ice hockey, judo, lacrosse, life saving, paddleball, home recrea-
tion games, figure, rugby, soccer, skiing, softball, squash, swim-
ning, table tennis, tennis, track and field, triathlon, tumbling,
volleyball, water polo, water safety instruction, weight training, wrestling.
The program also gives the student an opportunity to correct physical defects which respond to therapeutic exercises.

Elective Physical Education

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

Physical Education Skills for Men

1531 Physical Education Skills for Men 1 a.h.
Acquire foundational physical education activities, instruction, and training in sports skills, exercise, and arts such as swimming, weight lifting, and cardiorespiratory fitness training.

1532 Physical Education Skills for Men 1 a.h.
Continuation of 1531

1533 Physical Education Skills for Women 1 a.h.
Continuation of 1532

1534 Physical Education Skills for Men 1 a.h.
Continuation of 1533

1535 Physical Education Skills for Women 0 a.h.
Open only to students who elect to take physical education credit.

1536 Physical Education Skills for Men 0 a.h.
Continuation of 1534

Physical Education Skills for Women

1531 Physical Education Skills for Women 2 a.h.
Enrollment limited to female students who take physical education credit.

1532 Physical Education Skills for Women 2 a.h.
Continuation of 1531

1533 Physical Education Skills for Women 2 a.h.
Continuation of 1532

1534 Physical Education Skills for Women 2 a.h.
For first semester sophomores students electing to take physical education credit.

1535 Physical Education Skills for Women 1 a.h.
Continuation of 1533

Core Courses

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

Literature

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

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

111 Interpretation of Literature 4 a.h.
Interpretive strategies available to readers of poetry, narrative, and drama, with some consideration of film as literary medium

112 Biblical and Classical Literature 4 a.h.
Selections from Old and New Testament literature, Homer, Greek dramatists, Plato, Virgil and others

113 Medieval and Renaissance Literature 4 a.h.
Selections from Beowulf, Chaucer, Shakespeare, Milton and others

114 The Tragedy of Woman 3 a.h.
Major representations of tragic vision of woman's experience in sixteenth and seventeenth centuries in prose and drama, including Heloise, Hester, Lucrece, in prose and verse

115 Heroic Literature 4 a.h.
Selections of masterpieces as well as recent developments in art and storytelling in both poetry and prose

117 Lyric Poetry 4 a.h.
Poetry from major period of development as well as contemporary works, with emphasis on form, language and major formal patterns of poetry

118 Dramatic Literature 4 a.h.
Selections given from Shakespeare's time to present with some consideration of dramatic outline and forms in other genres

Social Science

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

Natural Science

1411 Human Biology 4 a.h.
Tracing in human evolution, reproduction, genetics and sex; integrated functions of our biological systems from cells to behavior; our place in and problems with our environment; lecture, laboratory, reading and discussion; independent of 11:22

1412 Ecology and Evolution 4 a.h.
An overview of directions of evolution and of diversity of living things, their adaptation to the earth, their organization in ecological systems and dynamics of evolutionary processes; lecture, laboratory, reading and discussion; independent of 11:22

Earth History and Resources

1231 Earth History and Resources (first half) 4 a.h.
History of the earth, the solar system and the universe; principles of geology and the earth sciences; lecture and lab

1232 Earth History and Resources (second half) 4 a.h.
History of the earth, the solar system and the universe; principles of geology and the earth sciences; lecture and lab

Physical Sciences

1226 Chemistry and Physics of the Environment 4 a.h.
Fundamental concepts and classification of chemistry and physics of ecology of our planet; earth, weather and climate, ocean, fresh water and the atmosphere; evolution of organisms and man's role in the environment; lecture and lab

1229 Ecology and Evolution 4 a.h.
An overview of directions of evolution and of diversity of living things, their adaptation to the earth, their organization in ecological systems and dynamics of evolutionary processes; lecture, laboratory, reading and discussion; independent of 11:22

Historical and Cultural Studies

1128 Problems in Human History 4 a.h.
Introduction to the study of human history, emphasizing the significance of world history; emphasis on methods of investigating and forming ideas about evidence, as well as on critical evaluation of the work historians have already written about the subject

1131 Western Civilization: Middle Ages to 1515 4 a.h.
Western Civilization: 1810 to Present
Evolution of Western civilization with emphasis on political, social, economic and cultural development of Europe, as related to problems of our own time

1133 Western Civilization: Middle Ages to 1810 4 a.h.
Evolution of Western civilization with emphasis on political, social, economic and cultural development of Europe, as related to problems of our own time

1135 Problems in Human History 4 a.h.
Some major anthropological theories of man and society from Plato to present
The Committee on Afro-American Studies also sponsors the Afro-American Cultural Center.

Staff: professors Bidding, Lano, Dolly, Schoor, Retish (Education), Hubbard (Engineering), Kovarik (Business Administration), Van Dyke ( Political Science), Corrigan, Psams (American Civilization), Turner, Hostetler, Abreu (English), Carter (Anthropology), McNulty (Geography), Moss (History)

Courses Priority Conceived with the Afro-American Experience

American Civilization
-2410 Black Poetry Workshop 3 s.h.
-4831 Contemporary Black Experience 3 s.h.
-4835-15 Afro-American Literature 1-3
Same as English 817-16
4830 20th Century Afro-American Fiction 3 s.h.
4835 Afro-American History (1819-1860) 3 s.h.
Same as History 16197
4836 Afro-American History (1865-present) 3 s.h.
Same as History 1618
4837 Black Action Theater 5 s.h.
4838 Afro-American Drama 3 s.h.
-4839 The Culture of Black America: An Interdisciplinary Approach 3 s.h.
An overview of the social, economic, political and religious experiences which have formed the black American.
-4830 Seminar: Afro-American Culture UAF. Exploration and analysis of social and historical directions which perpetuate and maintain process of racial discrimination
48322 Afro-American Literature
425 Politics and the Black Writer
4252 African-American Literature

Anthropology
113114 Spanish Speaking Peoples of the United States 3 s.h.
113118 Social Anthropology of the Caribbean 3 s.h.
Urban Anthropology 3 s.h.
113119 Peoples of Africa 3 s.h.
113118 Peoples and Cultures of North Africa and the Middle East 3 s.h.

Art
35218 Primitive Art: Africa

Business Administration
68110 Individual Rights in an Industrial Society 3 s.h.
68225 Employment Relations and Public Policy 3 s.h.

Economics
68137 Economics of Urban Problems 3 s.h.

Education
79104 Education in newly-developed countries 2 or 3 s.h.
79130 Educational Sociology 2 or 3 s.h.
79200 Seminar: Value Problems in the Administration of American Education 3 s.h.
Same as 7610
76103 Development of the School-age Child 2 or 3 s.h.
76103 Teaching the Equitably Disadvantaged 2 or 3 s.h.

Afro-American Studies

Program Chairman: Charles T. Dunce


Vigorous efforts are being made to develop a satisfactory curriculum and adequate college faculty to portray the experiences of black people in America. This program is concerned as well with the history and culture of black people in Africa and the Caribbean. It also focuses on the contemporary racial crisis with a commitment to the eradication of prejudice and stereotypes. The curriculum is designed to acquaint the student with the black experience in its historical context. It recognizes the need for both black and white participation, and it will provide training in a field that has been ignored for too many years. The ultimate objective is to provide University students with an understanding of the black man's contribution to American civilization—past and present. Afro-American Studies has been organized to further research and teaching in the area of culture. The student wishing to specialize in Afro-American Studies will emphasize this area in his or her graduate coursework, offer it as an examination field at the time of comprehensive examination and write an interdisciplinary dissertation on some aspect of Afro-American culture. The program plans call for a four-year developmental combining present courses with new courses. The curriculum is being developed in four phases for the purpose of preparing students and faculty members to add and delete courses systematically.
American Civilization

Geography
44/181 Afric a 3 s.h.

History
16/81 Survey of American History 1450-1877 3 or 4 s.h.
16/82 Survey of American History (1877-present) 3 or 4 s.h.

Sociology
*24/135 Race and Ethnic Relations 3 s.h.
*24/176 African Social Structure and Change 3 s.h.
Same as 118/211

Urban and Regional Planning
18/212 Urban Politics 3 s.h.
18/204 Planning of Metropolitan Areas 4 s.h.

American Civilization
Program Chairman: Alexander C. Kimm
Degrees offered: B.A., M.A., Ph.D.

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

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

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

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

Group A
Four semesters of American history:
16/41 Survey of American History
16/91-2 Individual Study
16/93-4 Honors Tutorial
16/95-6 Honors Seminar
16/97 Honors Thesis
16/161 The Colonial Period in American History
16/162 The American Revolutionary Period
16/163 The United States in the Middle Period
16/164 Recent American History
16/147-9 The Contemporary United States

16/170 The Northeast 1776-1850
16/171-2 The Frontier in American History
16/173-4 American Economic History
16/175-6 American Foreign Relations
16/179-80 American Intellectual History
16/181 Topics in American Social History
16/183-4 History of Iowa
16/197-8 Afro-American History
16/199 Religious and Democratic Traditions of the United States

Group B
Two semesters in two of these subject areas:
62/1-2 Principles of Economics
62/111 Labor Economics
62/123 Introduction to Urban and Regional Economics
62/137 Problems in Urban Economics
62/151 American Economic History
62/161 History of Economic Thought
7A/110 Introduction to Adult Education
7F/102 History of American Education
7F/103 Comparative Education
7F/117 Philosophies of Education
7F/133 John Dewey and Education
7S/115 Methods: High School English
7S/170 Methods: High School Social Studies
44/1 Introduction to Human Geography
44/10 Introduction to Economic Geography
44/35 Introduction to Urban Geography
44/22 Natural Resources of the United States
44/141 The United States and Canada
30/1 Introduction to American Politics
30/10 The American Political System
30/104 Political Parties
30/105 The Presidency
30/106 American Public Policies
30/107 American Constitutional Law and Politics
30/148 Legislative Behavior
30/163 American Foreign Policies
31/1 Elementary Psychology
31/101 Advanced Social Psychology
31/102 General Semantics
34/1 introduction to Sociology: Principles
34/2 Introduction to Sociology: Problems
34/20 Principles of Social Psychology
34/12 Seminar: Collective Behavior
34/133 Culture and Personality
34/135 Race, Community and the American Political System
34/160 American Society
34/170 Population and Society
34/171 The Urban Scene
34/172 The Urban Community
113/3 Introduction to the Study of Culture and Society
115/101 General Anthropology
32/72 Social Relations in American History
32/174 The Catholic Church in America
32/176 The Genius of American Religious Institutions
32/177 Puritanism in the Shaping of America
American Civilization

Group C
Four semester courses in American literature

Group D
45:1 American Civilization (survey)
45:90 Senior Colloquium
Two of them:
45:150 Individual Rights in an Industrial Society
45:152 American Folk Literature
45:155 Significant Books in American Civilization
45:161 Human Rights and the Law in America
45:25-4 Afro-American History
45:135 American Civilization in the 20s and 30s
45:197 Interpretation of American Civilization
45:198 Literature and the Film
45:191 Introduction to Graduate Study in American Civilization

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

The Master of Arts Program

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

Requirements for the Master of Arts in American Civilization:

a. thirty-eight semester hours of graduate work beyond the
   B.A., distributed about equally among American literature and
   history, and methods of studying American civilization;

b. study of a selected list of work important for an under-
   standing of American civilization;

c. an examination over both items above; and

d. completion of two successful term papers which demon-
   strate command of methods and materials.

The Doctoral Program

Coursework and Independent Study

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

Qualification

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

Comprehensive Examinations

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

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

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

Thesis

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

Final Oral Examination

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

Languages

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

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

Staff: professors Baedeker, Corrigan, Gerber, Kern, Oster,
Paul, Sayre, Whitaker, Morrey, Davis, Turner (English); Dyk-
stra, Goffman, Hawley, James, Neill, Pernon, Robertson, Ker-
ner (History); Alexander, Cutler, Seiberling (Art); Addis,
Burzica, Bergmann (Philosophy); Davis, Johnson, Schmid-
hauer, Van Dyke (Political Science); Gonzalez, Holm, Gold-
berg, McLaugh (Anthropology); Sanders (Sociology); Duffy
(Education), Beiker, MacCara (Speech and Drama); Hubbard,
Mayers (Engineering); Kovansky (Business Administration); Ver-
non (Law)

Courses Primarily for Undergraduates

4651 American Civilization I
485 American Civilization II
4653 Contemporary American Issues
46513 Contemporary Black Experience

3 s.h.

2 s.h.

3 s.h.

2 s.h.

2 s.h.
and provides a framework for understanding the species’ place in the natural world: evolutionary background and development. The organization of social life, cultural and systemic symbols, the evolution of cultures and societies, the interactions among society, personality, and sacred concepts for thought and feeling. In many ways anthropology is the most interdisciplinarian of disciplines.

An undergraduate major in anthropology provides a foundation for professional training not only of anthropologists but of doctors, nurses, lawyers, economists, political scientists, social workers, sociologists—anyone whose work will involve cultures and subcultures other than his own.

Majors must take a minimum of 29 semester hours of courses in anthropology, including 113:3 Introduction to the Study of Culture and Society and 114:111 Introduction to Archaeology and Physical Anthropology. In addition, each student must take one course in archeology, one course in ethnology and one course in social anthropology. The remaining hours are to be selected in consultation with the advisor. Course work is encouraged in such related areas as sociology, linguistics, geology, geography, psychology, zoology and statistics. The advisor may be consulted for specific recommendations.

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

Special Programs

Honor

Designed for maximum development of superior students' abilities and interests, the Honors Program in anthropology is open to students upon completion of the first semester, and is open to students upon completion of the first quarter of the second year. Students must complete the Department's Honors Seminar and Honors Research courses and serve as tutors for the anthropology core course, The World's Peoples.

Field Research

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

Graduate Programs

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

M.A. Program

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

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

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

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

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

Ph.D. Program

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

Total credit hour requirements are 46 at the graduate college. Full admission to the Ph.D. program is contingent on the successful completion of the qualifying examination required of all graduate students in the department. Distribution requirements are specified in terms of levels of competence and specialization rather than in terms of completed courses. In the comprehensive examination covering the area to which the student will be tested for general knowledge in the various subfields of anthropology-archaeological, cultural, and linguistic anthropology and physical anthropology, as well as for more comprehensive training in the specialization he or she has selected. The distribution requirement for the Ph.D. includes the mastery of two research skills, a geographic-cultural area and an anthropological research topic.

Ph.D. in Cultural Anthropology and Linguistics

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

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

Beyond this basic training, the candidate for the Ph.D. in cultural anthropology and linguistics may specialize either in one of the two areas with further work, or strike a balance between the two. At the completion of the core program, each student's achievement must be evaluated by the department's graduate faculty committee and the two departments, and appropriate recommendations are made.

It is not necessary that the student entering the program have taken an undergraduate major in either anthropology or linguistics. However, the department has found that the equivalent of two introductory courses in linguistics and anthropology (036:200 and 113:101), must be made up as deficiencies.

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

Research Skills

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

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

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

Special Facilities

The Department of Anthropology houses the State of Iowa's Archeological Collection. The University of Iowa was one of 20 universities which joined in 1949 to create the Human Relations Area Files, an extensively annotated bibliography of source materials on the people of the world—their environment, behavioral patterns, social and cultures. There are duplicate HRA Files at each participating university. Continually expanding, they not only provide a comprehensive reference guide but are themselves a valuable source of information. At Iowa, the HRA Files and other Main Library resources give anthropology students ready access to source material on more than 400 cultures.

The Faculty

Members of the Anthropology faculty have studied and lived in the Orient, the Near East, Africa, Latin America and among American Indians. Ongoing research in the Department includes work on such problems as the development of technologies to analyze ceramics in the Upper Tierras Blancas Valley in Mexico, research on traditional culture and language of the Tripolitania Jews, computer simulation of population demography in a Taiwanese village, patterns of female roles and child rearing among patterns in Liberia, the effects of a regional power installation on the Indians in the Black Mesa area, a comparative linguistic and ethnographic study among the Athabaskan Indians of Alaska and Northwestern Canada, and interactions between social classes and political processes. Faculty members have continued their research work during the past two years in Mexico, Japan, Liberia, the Canadian Subarctic, Africa, and Israel.

Staff: Charles F. Hays, Shuler: associate professor: Clarion, Goldberg, McKeel, assistant professors Carter, Klocowski, Marshall, McFaul

Courses: Anthropology

For Undergraduates Only

1. Introduction to the Study of Culture and Society 4 s.h.
The comparative study of cultures and social organization; may be taken in partial fulfillment of major requirements.

110.50 The World's Peoples: An Ethnographic Survey 4 s.h.
Anthropological studies of society and the world's peoples by which different people live; anthropological literature and ethnographic

110.51 Introduction to Anthropology and Physical Anthropology 4 s.h.
Origins and development of man and human evolution from prehistoric periods to modern man; cultural and biological evolution; introduction to man's physical evolution and culture history.

110.52 Individual Study 1 to 9 s.h.
Supervision reading in some special area or subfield of anthropology in which student has demonstrated previous interest or background.

110.58 Seminar in Anthropology 3 s.h.
For undergraduates majors with superior academic records; selected theoretical and methodological issues; prerequisites minor standing and consent of instructor.

110.59 Research Seminar 3 s.h.
Research seminars undertaken a special research project, under Honors chairman, given after satisfactory completion of the Honors adviser.

Advisory Courses: General Anthropology

110.51 General Anthropology 3 s.h.
Human evolution, population and race; the major traditions and areas of research; problems of contemporary culture and society; primordia for comparisons with advanced standing; open to students having taken 110.52.

110.56 History of Anthropology 3 s.h.
The development of anthropology as discipline, comparative method, participant, open to students having taken 110.55; prerequisites minor standing and consent of instructor.

110.60 Ethnography 3 s.h.
Prerequisites: consent of instructor

110.61 Biological Anthropology 3 s.h.
Study of techniques and principles to the field of physical anthropology of the United States, human genetics, population, race, endocultural theory, adaptations, and theories of evolution and cultural evolution; of anthropology emphasized; prerequisite 110.55 or 110.60.

110.62 Advanced Survey of Anthropology 2 to 9 s.h.
Selected topics in anthropological theory; problems, concepts and representatives of the major areas in the history of anthropology and prehistory, in the context of Western intellectual history and of anthropology as a social institution of practitioners, open to seniors and graduate students.

Ethnology

110.51 The American Indian 3 s.h.
History and culture; emphasis on North American; prerequisite 110.55 or 110.60
110.55 Anthropology in the New World 4 s.h.
The American Indians from the standpoint of primitive people; social organization and hunting; of applied anthropology emphasized; prerequisite 110.55 or 110.60.

110.57 Spanish-speaking Peoples of the U.S. 3 s.h.
Social structure and history of Spanish-American, Mexican-American, Puerto Rico and Cuban populations; open to students having taken 110.55 or 110.60.

110.58 Native Peoples of Middle America 3 s.h.
Indigenous peoples of Middle America, anthropological data, findings and relations considered from time of earliest contact up to the present in the region of central Mexico, Central America and parts of South America.

110.59 Native Peoples of Middle America 3 s.h.
Indigenous peoples of Middle America, anthropological data, findings and relations considered from time of earliest contact up to the present in the region of central Mexico, Central America and parts of South America.

110.67 Social Structure of Latin America 3 s.h.

110.68 Urban Anthropology 3 s.h.
The various cultural and social patterns of Latin American cities from the point of view of contemporary Latin American anthropologists and social scientists.

110.69 Indian Social Structure and Social Change 3 s.h.
Social organization and behavior of traditional African cultures; the development and social change of cities in the developing world; prerequisite 110.55 or 110.60.

110.70 The Social Control of Traditional African Cultures and Societies 3 s.h.
The development and social change of traditional African cultures and societies, open to students having taken 110.55 or 110.60; prerequisites minor standing and consent of instructor.

110.71 Projects in Anthropology 2 to 9 s.h.
Projects in the field of anthropology; open to seniors and graduate students.
The Bachelor of Arts Degree: Studio Art Major

In addition to the general College of Liberal Arts graduation requirements, the Bachelor of Arts degree with a studio art major requires from 29 to 30 semester hours of studio work, including at least three different areas of studio work, the introductory art history course and at least one additional art history course.

The Bachelor of Arts Degree: Art History Major

The Bachelor of Arts degree requirements for an art history major include eight semester hours of studio work, 18 to 30 semester hours of coursework in art history, at least two semesters of study in a second foreign language (one of the two is usually German) and 16 to 24 semester hours of coursework in classics, drama, history, literature, music, philosophy, religion, and methodology, and/or anthropology.

At least 38 or more than 50 credits earned in art courses can be counted toward the 124-credit total required for graduation with the Bachelor of Arts degree in studio art or art history.

The Bachelor of Fine Arts Degree

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

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

The Art Education Major

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

Admission

All high school graduates qualifying for admission to the University are thereby eligible for admission to the School of Art and Art History. Students planning to major in studio may have a portfolio of their work reviewed and commented upon by a faculty committee. Students planning to major in art education or the history of art may arrange pre-registration conferences with an advisor in those areas by applying at the main office in the Art Building.

Graduate Programs

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

Art History

The purpose of this program is to train professionally-oriented art history students planning a career in teaching, research and selected aspects of the museum field. It also offers courses to help broaden the conceptual and aesthetic understanding of students majoring in studio practice and other disciplines. Degrees are offered at the Master of Arts and Doctor of Philosophy levels. The individual graduate program in art history is planned in consultation with the student through a written statement of goals in which he or she will express his/her interests and objectives. A reading proficiency in one foreign language is required for the M.A. degree.

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

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

Studio M.A.

The graduate program in studio begins with coursework of the student's choosing. Following the student's selection of major emphasis and a faculty advisor, a clearance review is held at stated intervals at which time is determined whether the student is accepted into the degree program. Although the student may specialize or broaden his or her coursework to any degree satisfactory to him or her, it is necessary for at least one course in each major area to be taken this year. The student's thesis, if applicable, must be accompanied by a written statement, which, with the advisor's approval, may be no more than an inventory record and photographs.

Studio M.F.A.

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

Art Education

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

Facilities

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

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

Other School of Art facilities include a smithing furnace for bronze casting, a well-equipped darkroom, kilns sufficient for large to fire-brick-size ceramic sculptors, and a large shop for woodworking, metalworking and industrial design. These workshops also glass and metal casting furnaces and video equipment, and advanced spray equipment for the application of plastic foam and fiberglass in multimedia work.

Additionally, of course, there are many studios of various sizes. The School's library is one of the best in the nation, in size and function. It contains more than 35,000 volumes. The School's visual materials resources include more than 140,000 slides used in art history classes, and students have access to an additional 70,000 photographs and study cards.

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

The Faculty

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

Staff: professors Alexander, Berkeley, Cresswell, Fracassi, Lasansky, Lechay, Schultz, Selberling, Tousmik, Willie; associate professors Broder, Meyers, Parker; lecturer, Wilcox; visiting artists Schmidt, Tynack; assistant professors Begley, Choo, DePuma, Porter, Pal, Johnson, Munn, Rogers, Walker, Woodham; research assistant, Starks.
Art History

Courses Primary for Undergraduates

0302 Introduction to Persian Art

Art and architecture in Asia, Middle East, and South Asia: Prehistory, 3500 B.C.-1200 A.D.; 4th to 12th centuries; 1300-1500; 1600 to 1700; 1800-1900; 1900 to 1950; 1950 to 1980; 1980 to present.

0303 Art of the Pacific Islands: prehistoric to present.

0304 Art and Architecture in the Middle East: 3000 B.C.-1200 A.D.; 1300-1500; 1600-1700; 1800-1900; 1900 to 1950; 1950 to 1980; 1980 to present.

0305 Art and Architecture of the Americas: prehistory, 3500 B.C.-1200 A.D.; 1300-1500; 1600 to 1700; 1800 to 1900; 1900 to 1950; 1950 to 1980; 1980 to present.

0306 Art and Architecture of the Americas: prehistory, 3500 B.C.-1200 A.D.; 1300-1500; 1600 to 1700; 1800 to 1900; 1900 to 1950; 1950 to 1980; 1980 to present.

0307 Art and Architecture of the Americas: prehistory, 3500 B.C.-1200 A.D.; 1300-1500; 1600 to 1700; 1800 to 1900; 1900 to 1950; 1950 to 1980; 1980 to present.

0308 Art and Architecture of the Americas: prehistory, 3500 B.C.-1200 A.D.; 1300-1500; 1600 to 1700; 1800 to 1900; 1900 to 1950; 1950 to 1980; 1980 to present.

0309 Art and Architecture of the Americas: prehistory, 3500 B.C.-1200 A.D.; 1300-1500; 1600 to 1700; 1800 to 1900; 1900 to 1950; 1950 to 1980; 1980 to present.

0310 Art and Architecture of the Americas: prehistory, 3500 B.C.-1200 A.D.; 1300-1500; 1600 to 1700; 1800 to 1900; 1900 to 1950; 1950 to 1980; 1980 to present.
3/18/64 Modern Art II: Sculpture 3 a.h.
A survey of sculpture from Beaux in the present, emphasizing relationship between sculpture and painting.
3/18/65 American Art I 3 a.h.
Architecture, painting and sculpture in the United States from colonial times through early republic.
3/18/66 American Art II 3 a.h.
Architecture, painting and sculpture in the United States from 1825 to 1914.
3/18/67 History of Prints 3 a.h.
Prints and the print book as an important art form and as an influential source of style and content. The development of the print form and the history of the art form.
3/18/68 Reading in Art History 3 a.h.
An introduction to reading in art history. The art historian's approach to research and writing. The development of the art historical discipline through the history of art.
3/18/69 Theory and Form in Western Art 3 a.h.
Relationship of theories of art and art criticism to painting and sculpture in Europe from classical period to Renaissance.

Courses Primarily for Graduates

3/19/62 Seminar: Problems in Primitive Art 2 or 3 a.h.
3/19/63 Seminar: Problems in Egyptian and Mesopotamian Art 2 or 3 a.h.
3/19/65 Advanced O/PWl Art: India 2 or 3 a.h.
Same as 3/19/64
3/19/66 Seminar: Problems in Oriental Art 2 or 3 a.h.
3/19/67 Seminar: Problems in Ancient Art 2 or 3 a.h.
Same as 3/19/66
3/19/68 Seminar: Problems in Early Christian and Byzantine Art 2 or 3 a.h.
Same as 3/19/63
3/19/69 Seminar: Problems in Medieval Art 2 or 3 a.h.
3/19/67 Seminar: Problems in Northern Renaissance Art 2 or 3 a.h.
3/19/68 Seminar: Italian Renaissance Sculpture 2 or 3 a.h.
3/19/70 Seminar: Problems in 19th Century Art 2 or 3 a.h.
3/19/72 Seminar: Problems in Woman Artist's Art 2 or 3 a.h.
3/19/73 Seminar: Problems in Asp.-Imp. Art 2 or 3 a.h.
3/19/74 Seminar: Art History Workshop 2 or 3 a.h.
3/19/75 Seminar: Art History Workshop 2 or 3 a.h.
3/19/76 Seminar: Methodology of Art History and Criticism 2 or 3 a.h.
Use of history and critical investigative resources; different approaches to art history and criticism and their varying research requirements; scholarly presentation of results.
3/19/77 Directed Studies 2 or 3 a.h.
3/19/78 A.P.A. Seminar Thesis 2 or 3 a.h.
3/19/79 A.P.A. Written Thesis 2 or 3 a.h.
3/19/80 A.P.A. Oral Thesis 2 or 3 a.h.

Art Studio

Courses Primarily for Undergraduates

3/20/61 Elements of Art 2 or 3 a.h.
Not open to majors, practice and practice of art, for those who have little or no experience with it, studio work in drafting and design complemented by weekly lecture and student workshop sessions.
3/20/62 Art Forms I 3 a.h.
For art majors only; drawing and analysis; two-dimensional concept design; criticism and internal articulation; drawing and presentation forms from human figure.
3/20/63 Art Forms II 3 a.h.
For art majors only; color theory; pattern design; painting tools and techniques; print projects; three-dimensional design. Prerequisite: 15.1
3/20/64 Art Forms III 3 a.h.
For art majors only; critical analysis and drawing through construction, layout, and computer graphics design preparation. Prerequisite: course or equivalent. Is suitable for students interested in design for print, advertising, and the visual arts.
3/20/65 Art Forms IV 3 a.h.
For art majors only; critical analysis and drawing through construction, layout, and computer graphics design preparation. Prerequisite: 15.1

Course Requirements for Undergraduates and Graduates

The Studio courses numbered between 100 and 199 are offered both semester and may be repeated, except where specified. Registration for the same day-hour credit will be limited to space in each of the classes, and require five clock hours per week of assignments to be completed outside of class. With permission of their advisors, students may take more than one course in each of the major sections courses.
Botany

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

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

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

The Bachelor of Arts Degree

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

Mathematics through 223/230 Elementary Functions 4.1. 4.6 and 4.6 General Chemistry
4.121-2 and 4.141 Organic Chemistry

Twenty-four semester hours of botany to include:

2.3 Introduction to Botany 5 s.h.
2.10 Development of Land Plants 3 s.h.
2.12 Algae and Fungi 3 s.h.
2.13 Biology of the Local Flora 3 s.h.
2.102 or 371/101 Genetics 3 or 4 s.h.

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


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

The Honors Program

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

In addition to the regular requirements for the B.A. degree, Honors students must complete three semester hours of research...
(2-124 Hours in Botany) during the senior year, maintain the grade-point average required for admission to the program and pass all Honours examination at the end of the senior year.

Graduate Study

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

Admission

See "Graduate College."

General Requirements

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

Departmental Requirements

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

The Master's Degree in Botany

Advanced study may be undertaken with emphasis in anatomy, botany, cell biology, ecology, genetics, molecular biology, mycology, palaeobotany, physiology, psychology 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. The preparation of a thesis is optional.

Each student must:

- Submit a program of study approved by a guidance committee comprising three members of the graduate faculty, one of whom may be from another department. Normally, as a guidance procedure, the program of study should be prepared during the first semester in residence as a regular graduate student.
- Complete at least 16 semester hours of graduate courses in botany, as prescribed by the guidance committee. No more than six semester hours of 2225 Research and 2225 Thesis may be used to fulfill this requirement.
- Achieve a grade-point average of 3.0 on all courses—other than Research—up to the time of the final examination.
- Take a written examination during the term in which he or she normally graduates. This is followed within a week by an oral examination. These examinations cover the courses and research experience the student has had up to this point.

The Master's Degree in Biology for Science Teachers

Emphasis in Botany

A student electing this degree must complete at least 30 semester hours of graduate work, including the preparation of an acceptable thesis, or 36 semester hours without thesis. Undergraduate preparation must include eight semester hours of botany and eight semester hours of zoology. A general biology course may not be submitted as part of this requirement.

Graduation requirements:

With thesis—14-16 semester hours of botany including 2225 Research, eight semester hours of zoology electives, and four to eight semester hours of electives in cognate fields.

Without thesis—20-24 semester hours of botany including 2225 Research, eight to 10 semester hours of zoology electives, and four to eight semester hours in cognate fields.

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

Doctor of Philosophy

The general requirements of the Graduate College apply to all students (see "Graduate College"). Specialization may be in any one of the fields listed under the master's degree. With the aid of his or her major professor, the student should enter directly into planning for the degree and submit a program of study to a guidance committee comprising the major professor and two other members of the graduate faculty, one of whom may be from another department.

The normal program of study for the Ph.D. is prepared during the first semester in residence following the award of a master's degree. The guidance committee prescribes the formal courses or proficiency requirements which the candidate must meet. The background of the candidate, his or her educational and career goals, and his or her current or prospective research interest are taken into consideration. The committee also establishes which portion of the formal coursework or specific proficiency (such as ability to read certain foreign languages) will be demanded of the student before he or she is admitted to the comprehensive examination.

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

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

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

Special Facilities and Activities

Students conducting experiments or research projects requiring the cultivation of plants or access to greenhouses and special culture rooms with controlled environments. A remodeled plant physiology laboratory is available, with associated greenhouses. There is an excellent departmental library in the building.

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

A herbarium for research and herbarial 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 Conrad Herbarium of Stryphnothec and the Martin collections of fungi and stony molds.

Within a few miles of the campus, a forest preserve is available for field trips and experimental projects. A biological field station at Iowa Lakeside Laboratory (see "Extension Division") on West Lake Okoboji in northwestern Iowa affords 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.

Graduate students frequently use the University Computer Center in their research projects.

Faculty

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

Staff: professors Huberty, Mair, Rosinski, associates professors Criswell, Dams, Guerin, Maitre, assistant professors Carlson, Schallion, Sjoholm, Surzycki.

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

Courses Primarily for Undergraduates

211 Introduction to Botany 3 a.h.

Cultural experience with biology of plant life; structure, functions, reproduction and inheritance in plants; open to all students; recommended for students in general science, ecology and those preparing to teach science; three lectures and two laboratory periods per week; may be continued as 211L or 211L or 213 to satisfy the natural science core requirement.

211L Evolution of Land Plants 3 a.h.

Spermatophytes and vascular plants including their structure, evolution and major groups; three lectures and one laboratory period per week; prerequisites 211L or equivalent.

213 Major and Fungi 3 a.h.

Biology of the major groups, their development, comparative morphology and evolutionary relationships; two lectures and one laboratory period per week; prerequisites 211L or equivalent.

212 Biology of the Level Flora 3 a.h.

Identification, recognition and reproduction of angiosperms and gymnosperms of Illinois removed; the ecology of woodland and prairie communities stresses; two lectures and three laboratory per week; field work will finish; prerequisites 211L or equivalent.

Courses for Undergraduates and Graduates

2191 Plant Taxonomy 3 or 4 a.h.

Principles of plant taxonomy as illustrated by study of variation within and relationships between selected families and orders of angiosperms; prerequisites 211L or equivalent.

2192 Seminar 3 or 4 a.h.

Structure, behavior and function of botanical materials; laboratory whereas basic patterns of botany; optional for seniors; lecture and laboratory, two seminar units are used as Zoology 2192B; prerequisites 311L or Zoology 2192B or equivalent.

2194 Fundamental Genetics 2, 3 or 4 a.h.

Murn and function of genetic mechanisms; three lectures and one laboratory laboratory illustrates application of genetic analysis, optional for research work: prerequisites Zoology 2194; prerequisites 211L or Zoology 2194 or equivalent.

2196 Cytogenetics 3 a.h.

Structure and function of chromosomes; process of meiosis; chromosomes in relation to inheritance, inversions, duplications, deletions, aneuploids and steps mechanisms of the chromosome; significance of heteromorphism; study of polyploids; two lectures and two laboratory; prerequisites Zoology 2196; prerequisites Zoology 2196 or equivalent.

2198 Physiology 4 a.h.

Structure and reproduction of plants, freshwater and marine, including cytology and physiology of representatives of major taxonomic groups; lecture, laboratory and field trips; prerequisites 2198 or equivalent.

2399 Bryology 4 a.h.

Lecture, laboratory and field work dealing with development, structure and evolution of mosses and liverworts; prerequisites 2199 or equivalent.

2399 Mycology 4 a.h.

Morphology, cytochemistry and taxonomy of fungi with study of representatives groups; prerequisites 2199 or equivalent.

2399 Experimental Mycology 4 a.h.

Principles of fungal; procedures for growth and morphological observations; prerequisites a course in botany or biology and a year of organic chemistry or elements of instructor.

2399 Plant Physiology 4 a.h.

Lectures and laboratory; experimental study of functions in plants cell physiology, water transport, and chemical synthesis; prerequisites 2199 or organic chemistry.

2399 Plant Anatomy 4 a.h.

Adaptation and interaction between organisms and their environment; plant in- clude, functions, reproduction, disease, taxonomic, history of nature genetics, enzyme differentiation, breeding systems, pollination systems, lettuce, laboratory and field trips; prerequisites 2199 or equivalent; a course in genetics is helpful.

2399 Plant Taxonomy 4 a.h.

Lecture and laboratory; experimental study of woody species, wood anatomy, growth and development of seed plants; prerequisites 2199 or organic chemistry.

2399 Experiments in Plant Physiology 3 a.h.

Lecture and laboratory; experimental study of woody species, wood anatomy, growth and development of seed plants; prerequisites 2199 or organic chemistry.

2399 Plant Anatomy 4 a.h.

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Lecture and laboratory; experimental study of woody species, wood anatomy, growth and development of seed plants; prerequisites 2199 or organic chemistry.
Chemistry

2111 Experimental Techniques 2 a.h.
Lecture and laboratory work with pipet, sampling, colorimetry, spectrophotometry, chromatography and selected chemical analysis. Prerequisites: consent of instructor.

2118 Experimental Techniques 2 a.h.
Consideration of 2115, but may be taken as an independent study. Chemical analysis, enzyme studies and measurement of photosynthesis and respiration.

2120 Systematics 3 a.h.
Most important groups of flower plants; their structure, evolution, phylogenetic relationships, classification and problems of nomenclature. Prerequisites: 2111 or equivalent or consent of instructor. same as 1237.

2121 Plant Anatomy 4 a.h.
Natures, origin and use of pollen and spores. Field and laboratory study of pollen-bearing structures, application to classification, taxonomy, palynology and archaeology. Prerequisites: a course in geology biology or botany; same as 1232.

2125 Biology of the Lunar Plants 4 a.h.
Comparative study of the taxonomy, morphology, physiology and ecology of Physcomitrella (brown algae and water molds). Prerequisites: 2 or equivalent.

2145 Honors in Botany or gr. a.r.
Each year: prerequisites senior standing and grade-point average 3.0 overall, 3.5 in biology. 2131 Evolution 4 a.h.
Nature of evolutionary mechanisms, their genetic basis and their expression in terms of adaptation and distribution of plants and animals, lecture, discussion, reading: prerequisites: 353 or 21 or equivalent; same as 37 or 1 points.

2133 Ecology 4 a.h.
Ecological concepts as they relate to adaptations of organisms to environments, organization and dynamics of populations, and structure and dynamics of ecosystems. Prerequisites: an introductory course in biology, ecology or botany; same as 3122.

2137 Medical Mycology 4 a.h.
Basic techniques used in study of fungi which are pathogenic for man, representatives limited and not present in the instructor; same as Microbiology 1410.

2131 Plant Anatomy 3 a.h.
Histology, development, and written reports on phases of plant science of personal interest to student. Prerequisites limited and not present in the instructor; same as Microbiology 1410.

2160 Genetics of Cell Organizers 3 a.h.
Lectures and laboratory work on the chemical and molecular genetics of cell organization. Prerequisites: 2110 and 3110 or equivalent, or consent of instructor.

2161 Plant Biochemistry 3 a.h.
Structure of inorganic and carbon compounds; standard laboratory techniques for studying DNA, RNA and proteins. Prerequisites: 2105 and 3110 or equivalent.

2181 Experimental Botany 4 a.h.
A course designed for advanced students in genetics and related fields. Standard laboratory techniques for studying DNA, RNA and proteins. Prerequisites: 3105 or 3110 for consent of instructor.

2202 Seminar: Genetics 3 a.h.
Lectures, discussions and seminars on selected topics in genetics; a specific topic will be selected each year, course may be repeated for credit; prerequisites: 3105 or 3110 and consent of the instructor; same as Zoology 3213 and 6213.

2205 Seminar: Morphogenesis 3 a.h.
Deal with problems of current status of cell and tissue differentiation, developmental anatomy and experimental morphology of plants and animals. Prerequisites: 2213 or equivalent.

2206 Advanced Plant Physiology 3 a.h.
Lectures and laboratory work on processes of photosynthesis, respiration, translocation, and water utilization in both normal and abnormal plants. Prerequisites: 3105 or 3110 or equivalent and one year of college chemistry or physics.

2211 Seminar: Ecology 3 a.h.
Problems seminar with lectures, discussions and literature review on selected topics in ecology; offered in alternate years; may be repeated for credit.

2214 Seminar: Botany 4 a.h.
Lectures and laboratory directed for advanced graduate students with definite plan in area of ecology.Emphasis in current research and problems of field description, field techniques, field equipment, and search and preservation of field samples. Prerequisites: 2145 and consent of instructor.

2317 Plant Breeding 4 a.h.
Readings and discussions on breeding; prerequisites: consent of instructor.

2319 Plant Physiology 4 a.h.
Readings and discussions of current American and foreign research literature, monographs and professional texts. Prerequisites: 2305 and 3110 or equivalent and consent of instructor.

2321 Seminar: Botany 4 a.h.
Readings and discussions of current American and foreign research literature, monographs and professional texts. Prerequisites: 2305 and 3110 or equivalent and consent of instructor.

2325 Seminar: Botany 4 a.h.
Readings and discussions of current American and foreign research literature, monographs and professional texts. Prerequisites: 2305 and 3110 or equivalent and consent of instructor.

Department Chair: Frank H. Duke
Degrees offered: B.S. B.A. M.A., Ph.D.

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

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

A chemistry major with a Bachelor of Science in Arts degree and the required education courses may teach at the high school level. State laboratories and agencies are employing many chemists. In industry, the chemist with a bachelor's degree may find employment in routine laboratory work, assisting on a research project or working in product development, marketing, sales, plant management or other areas on the business side.

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

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

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

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

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

The Bachelor of Science Degree

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

Chemistry Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Offering</th>
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<tbody>
<tr>
<td>411, 412 or 413</td>
<td>Principles of Chemistry</td>
<td>Elementary Chemistry Laboratory</td>
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<tr>
<td>413, 414, 415</td>
<td>Organic Chemistry</td>
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<td>416, 417, 418</td>
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<tr>
<td>422, 423, 424</td>
<td>Advanced Chemistry Laboratory</td>
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<tr>
<td>425, 426, 427</td>
<td>Advanced Inorganic Chemistry</td>
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<tr>
<td>428, 429, 430</td>
<td>Introduction to Senior Research</td>
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<tr>
<td>431, 432, 433</td>
<td>Senior Research</td>
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<tr>
<td>434, 435, 436</td>
<td>Chemistry Orientation</td>
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</tbody>
</table>

* May be satisfied by examination

Mathematics

Selected courses to include integral calculus.

Physics

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

Foreign Languages

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

Electives

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

The Bachelor of Arts Degree

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

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<td>422, 423, 424</td>
<td>Intermediate Chemistry Laboratory</td>
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<tr>
<td>425, 426, 427</td>
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<tr>
<td>428, 429, 430</td>
<td>Chemistry Orientation</td>
<td></td>
</tr>
</tbody>
</table>

* May be satisfied by examination

Mathematics

Selected courses to include integral calculus.

Physics

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

Foreign Languages

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

Electives

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

Teaching Certification

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

(See College of Education.)

One- and Two-Year Curricula in Chemistry

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

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<td>Chemistry Orientation</td>
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* May be satisfied by examination
Graduate Study in Chemistry

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

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

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

Entering students will be given the opportunity to take exemption examinations to demonstrate competence in the areas listed above. These exams will be given at the opening of the academic year and will cover material equivalent to that given in the courses listed above. Students with undergraduate majors in chemistry, mathematics or physics may elect chemical physics as a major area of specialization. Programs of study leading to advanced degrees are administered jointly by the departments of Chemistry and Physics. Selected courses in chemistry, mathematics and physics are substituted for the above required courses. Course requirements can be obtained by writing to the chairman, Department of Chemistry.

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

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

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

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

Examinations
Although research rather than subjective examinations (except in courses) is emphasized, a minimum number of oral examinations are required for the various advanced degrees.

The oral examination for the M.S. degree with thesis consists of a defense of the written thesis. A minimum grade-point index of 2.5 is required for admission to the master's examination. The examination for the M.S. degree without thesis covers graduate coursework. The Ph.D. oral comprehensive examination may also serve as the oral examination for the M.S. degree.

An oral comprehensive examination in defense of a prepared research proposition is required for candidacy for the Ph.D. degree. Students who have demonstrated the required competence in the four areas of chemistry and who have maintained a minimum grade-point index of 2.70 are admitted to the oral examination upon presentation and preliminary approval of their research proposal. Six months after the Ph.D. oral comprehensive examination, another examination is given to evaluate the candidate's research progress. A final oral examination is required of all candidates for the Ph.D. degree. The Ph.D. thesis and a manuscript of the published portion of the thesis (written in the correct style for a chemistry journal) must be defended satisfactorily before an examining committee. The Ph.D. examining committee, composed of five members of the graduate faculty, is the final authority in recommending conferment of the Ph.D.

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

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

P.L.D. in Applied Mathematics
The Department of Chemistry cooperates in interdisciplinary
# Courses Primarily for Undergraduates

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>4131</td>
<td>4131 - Inorganic Syntheses</td>
<td>2 or 3</td>
<td>4 or 5 a.h.</td>
</tr>
<tr>
<td>4135</td>
<td>4135 - Inorganic Chemistry</td>
<td>3</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>4136</td>
<td>4136 - Introduction to Organic Chemistry</td>
<td>3</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>4137</td>
<td>4137 - Analytical Chemistry</td>
<td>3</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>4138</td>
<td>4138 - Analytical Chemistry with emphasis on instrumental methods of analysis</td>
<td>3</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>4139</td>
<td>4139 - Aromatic Chemistry</td>
<td>3</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>4140</td>
<td>4140 - Instrumental Methods of Analysis</td>
<td>3</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>4141</td>
<td>4141 - Physical Chemistry</td>
<td>3</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>4142</td>
<td>4142 - Inorganic Chemistry</td>
<td>3</td>
<td>3 a.h.</td>
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<tr>
<td>4143</td>
<td>4143 - Organic Chemistry</td>
<td>3</td>
<td>3 a.h.</td>
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<tr>
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</tr>
<tr>
<td>4145</td>
<td>4145 - Introduction to Organic Chemistry</td>
<td>3</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>4146</td>
<td>4146 - Introduction to Polymer Chemistry</td>
<td>3</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>4147</td>
<td>4147 - Introduction to Physical Chemistry</td>
<td>3</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>4148</td>
<td>4148 - Elementary Physical Chemistry</td>
<td>3</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>4149</td>
<td>4149 - Elements of theoretical chemistry, elementary for premed students and biological science majors</td>
<td>3</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>4151</td>
<td>4151 - Physical Chemistry I</td>
<td>3</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>4152</td>
<td>4152 - Physical Chemistry II</td>
<td>3</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>4153</td>
<td>4153 - Introduction to Symmetry in Quantum Chemistry</td>
<td>3</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>4154</td>
<td>4154 - Elementary quantum physics</td>
<td>3</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>4155</td>
<td>4155 - Advanced Chemistry Laboratory I</td>
<td>2</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>4156</td>
<td>4156 - Advanced Chemistry Laboratory II</td>
<td>2</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>4157</td>
<td>4157 - Advanced Chemistry Laboratory III</td>
<td>2</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>4158</td>
<td>4158 - Advanced Chemistry Laboratory IV</td>
<td>2</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>4159</td>
<td>4159 - Advanced Chemistry Laboratory V</td>
<td>2</td>
<td>2 a.h.</td>
</tr>
<tr>
<td>4160</td>
<td>4160 - Introduction to Senior Research</td>
<td>1</td>
<td>1 a.h.</td>
</tr>
<tr>
<td>4161</td>
<td>4161 - Introduction to Senior Research</td>
<td>1</td>
<td>1 a.h.</td>
</tr>
<tr>
<td>4162</td>
<td>4162 - Senior Research</td>
<td>1</td>
<td>1 a.h.</td>
</tr>
<tr>
<td>4163</td>
<td>4163 - Advanced Inorganic Chemistry</td>
<td>3</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>4164</td>
<td>4164 - Advanced Analytical Chemistry</td>
<td>3</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>4165</td>
<td>4165 - General Organic Chemistry</td>
<td>3</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>4166</td>
<td>4166 - General Organic Chemistry</td>
<td>3</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>4167</td>
<td>4167 - Chemical Pedagogy</td>
<td>3</td>
<td>3 a.h.</td>
</tr>
</tbody>
</table>
Courses Primarily for Graduates

Seminar in Chemistry
The following courses present discussions of latest advances in the various fields of chemistry; prerequisite consists of instructor
4021 Seminar: Analytical Chemistry 0 or 1 s.h.
4023 Seminar: Inorganic Chemistry 0 or 1 s.h.
4025 Seminar: Organic Chemistry 0 or 1 s.h.
4026 Seminar: Physical Chemistry 0 or 1 s.h.

Research in Chemistry
The following courses present thesis work for advanced degrees; conference and laboratory work required; prerequisite consists of head of Department and major instructor.
404 Research: Analytical Chemistry 2 or 3 s.h.
4049 Research: Inorganic Chemistry 2 or 3 s.h.
4059 Research: Organic Chemistry 2 or 3 s.h.
4059 Research: Physical Chemistry 2 or 3 s.h.

Child Behavior and Development
(Institute of Child Behavior and Development)

Acting Director: Howard V. Meredith

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

A primary function of the Institute is the training of students for research and teaching careers in the field of child development.

In discharging this function the Institute offers programs leading to the B.A. degree in child development, the M.A. degree in preschool education, the M.A. degree in child behavior and the Ph.D. degree in child psychology.

Undergraduate Major

The B.A. program in child development serves a twofold purpose.

For students not planning to continue academic training beyond the bachelor's level, it provides a scientifically-oriented liberal arts education focusing on accumulated knowledge regarding infant and child behavior. For students who plan to obtain subsequent graduate training in child psychology and related fields, it provides a scholarly foundation of method and content.

Career opportunities are scarce for students at the B.A. level. At the M.A. level there is a variety of employment opportunities, and career opportunities are plentiful for students earning the Ph.D. degree.

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

Prerequisite
311 Elementary Psychology 3 s.h.
22M10 Elementary Functions (or equivalent) 3 s.h.

and any two of the following:
291 College Physics 4 s.h.
292 College Physics 4 s.h.
47 General Chemistry I 3 s.h.
48 General Chemistry II 3 s.h.
373 Principles of General Biology 5 s.h.
37101 Principles of Human Genetics 3 s.h.

Required courses:
501 Introduction to Child Psychology 3 s.h.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/92</td>
<td>Laboratory in Child Psychology</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/93</td>
<td>Social Development of Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/94</td>
<td>Language Processes in Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/104</td>
<td>Sensation and Perception in Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>26/104</td>
<td>Introduction to Philosophy of Science</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31/143</td>
<td>Introduction to Statistical Methods</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/100</td>
<td>Child Development</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/101</td>
<td>Basic Processes in Children's Learning</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>7P/131</td>
<td>Educational Psychology</td>
<td>3-4 s.h.</td>
</tr>
<tr>
<td>17/19</td>
<td>Principles of Nutrition</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31/15</td>
<td>Introduction to Social Psychology</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31/120</td>
<td>Experimental Psychology I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31/121</td>
<td>Experimental Psychology II</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31/122</td>
<td>Psychology of Learning</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31/123</td>
<td>Motivation</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31/133</td>
<td>Perception</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31/144</td>
<td>Statistical Inference in Behavioral Science</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>37/101</td>
<td>Principles of Human Genetics</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

**Graduate Majors**

M.A. in Preschool Education

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

**Required courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/201</td>
<td>Introduction to Child Psychology</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/202</td>
<td>Laboratory in Child Psychology (register for 5/199)</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/215</td>
<td>Methodological Problems in Child Developement</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/520</td>
<td>Seminar Child Development Research</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/523</td>
<td>Preschool Education</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/231</td>
<td>Seminar Curriculum Development in the Preschool</td>
<td>0 s.h.</td>
</tr>
<tr>
<td>5/234</td>
<td>Advanced Practicum in Preschool Educaion</td>
<td>1-4 s.h.</td>
</tr>
<tr>
<td>5/301</td>
<td>Research in Child Development</td>
<td>5-7 s.h.</td>
</tr>
<tr>
<td>7E/157</td>
<td>Methods Early Childhood Education I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31/143</td>
<td>Introduction to Statistical Methods</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/100</td>
<td>Child Development</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/154</td>
<td>Sensation and Perception in Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/155</td>
<td>Language Processes in Children (register for 5/199)</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/218</td>
<td>Social Behavior of Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/235</td>
<td>Psychophysiology of Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/240</td>
<td>Learning in Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/241</td>
<td>Motivational Determinants of Child Behavior</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/242</td>
<td>Visual Psychophysics of Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/243</td>
<td>Verbal Processes in Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/244</td>
<td>Mathematical Models of Child Behavior</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

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

M.A. in Child Behavior

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

**Required courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/201</td>
<td>Methodological Problems in Child Developement</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/215</td>
<td>Seminar Child Development Research</td>
<td>0 s.h.</td>
</tr>
<tr>
<td>5/240</td>
<td>Learning in Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/301</td>
<td>Research in Child Development</td>
<td>5 s.h.</td>
</tr>
<tr>
<td>31/143</td>
<td>Introduction to Statistical Methods</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>22S/100</td>
<td>Advanced Statistical Methods</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>22S/159</td>
<td>Design of Experiments</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>31/232</td>
<td>History and Systems of Psychology</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31/235</td>
<td>Laboratory Techniques</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/218</td>
<td>Social Behavior of Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/235</td>
<td>Psychophysiology of Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/241</td>
<td>Motivational Determinants of Child Behavior</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/242</td>
<td>Visual Psychophysics of Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/243</td>
<td>Verbal Processes in Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5/244</td>
<td>Mathematical Models of Child Behavior</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>
5249 Discrimination Learning in Children 3 s.h.
5282 Infant Learning and Perception 3 s.h.

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

Ph.D. in Child Psychology

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

Required courses

5201 Methodological Problems in Child Development 3 s.h.
5216 Seminar: Child Development Research 0 s.h.
5240 Learning in Children 3 s.h.
5241 Motivational Determinants of Child Behavior 3 s.h.
228:148 Advanced Statistics: Methods 4 s.h.
228:159 Design of Experiments 4 s.h.
22M:197 Readings in Mathematics: Calculus I 3 s.h.
26:209 Philosophy of Science 2 s.h.
31:232 Conditioning and Learning 3 s.h.
31:233 History and Systems of Psychology 3 s.h.
One of the following
22M:197 Readings in Mathematics: Calculus II 3 s.h.
22S:157 Correlation Methods 3 s.h.
31:245 Quantitative Methods in Psychology 3 s.h.

Two of the following
5211 Social Behavior of Children 3 s.h.
5222 Perceptual Processes in Children 3 s.h.
5235 Psychophysiology of Children 3 s.h.
5243 Vocal Processes in Children 3 s.h.
One of the following
5244 Mathematical Models of Child Behavior 3 s.h.
5249 Discrimination Learning in Children 3 s.h.

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

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

Graduate Admission Requirements and Procedures

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

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

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

Facilities

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

The Institute maintains a well-equipped workshop staffed with skilled personnel, which, in conjunction with the Institute's research apparatus, the preschool complex includes numerous laboratory rooms equipped with one-way vision facilities. A wide variety of timing, recording, stimulus production and computational
Courses for Undergraduate Students Only

S181 Introduction to Child Psychology 3 s.h.
Research and theory in child psychology, with emphasis on basic principles of learning and motivation; prerequisite Psychology 211 or equivalent; same as Psychology 211; students earning optional laboratory credit should register for S182.

S182 Laboratory in Child Psychology 1 s.h.
Demonstration of laboratory research and participation in classic experiments with preschool-age children; same as Psychology 212; should be taken concurrently with or following S181.

S285 Social Development of Children 3 s.h.
Development of interpersonal behaviors in children with emphasis on applications of learning principles to acquisition and maintenance of social behavior; prerequisite Psychology 211 or equivalent.

S286 Language Processes in Children 3 s.h.
Basic data, theoretical analysis and current controversy concerning nature of language development; prerequisite Psychology 211 or equivalent.

S386 Observation and Participation in the Preschools 2 to 6 s.h.
The University Preschool as laboratory for studying and experiencing influence of environment on child's development; not open to students majoring in child development.

S410 Child Development 3 s.h.
Theories of child development in modern society; age-related changes in behavior; study of research; development and evaluation of early childhood programs; same as Psychology 271; Education 715PD or 716PD (same as Psychology 271PD) and consent of instructor.

S414 Sensation and Perception in Children 3 s.h.
Research procedures and results bearing on sensory and perceptual processes in children; prerequisites 591 and Psychology 211 or equivalent.

S450 Research in Child Psychology 3 s.h.
Research topics of interest to child psychologists.

S490 Readings in Child Psychology 1 s.h.
Graduate students for whom 591 and/or 594 would be inappropriate may enroll for up to three semester credits of credit 591 and/or 594 by registering for this course; prerequisite consent of instructor.

S510 Methodological Problems in Child Development 3 s.h.
Analysis and discussion of specific methodological problems; study of research design and research procedures in child psychology; laboratory exercises in analyzing studies in child psychology.

S511 Special Problems in Child Development 3 s.h.
Analysis and critical evaluation of proposed and completed research projects.

S512 Principles of Social Organization 3 s.h.
Theories, methods and research findings, with emphasis on learning analysis of social interaction; prerequisite consent of instructor.

S523 Perceptual Processes of Children 3 s.h.
Analysis of research on perceptual development; topics include basic sensory development, pattern, form and distance discrimination, and perceptual constancy; prerequisites 591 and 594 or equivalent and consent of instructor.

S525 Educational Psychology 3 s.h.
Principles and procedures, with emphasis on specific aspects of UniversityPrepared Laboratories.

S527 Seminar: Curriculum Development in the Preschool 3 s.h.
Principles of curriculum development, improvement throughout preschool years; prerequisites S181 or equivalent.

S528 Advanced Practicum in Preschool Education 1 to 6 s.h.
Clinical observation and participation in Preschool Laboratories; prerequisite S181.

S535 Child Psychology 3 s.h.
Fundamentals of child psychology, styles and developmental psychopathology; tasks and concepts from studies relating psychological and electrophysiological variables with emphasis on experimental work with infants and children; prerequisite consent of instructor.

S546 Learning in Children 3 s.h.
Review and analysis of experimental research on learning processes; emphasis on classical and instrumental conditioning, generalization, discrimination learning, verbal learning, memory; same as Psychology 311.

S547 Motivational Determinants of Child Behavior 3 s.h.
Motivation and/or meaningful interpretation of children's behavior; child research focused on meaningful interpretation of children's behavior, research focused on meaningful interpretation of children's behavior.

S548 Visual Perception in Children 3 s.h.
Analysis and interpretation of relevant research to study of visual processes in children; prerequisites 594 or equivalent.

S549 Verbal Processes of Children 3 s.h.
Verbal behavior in children; emphasis on the role of verbal behavior in children's and adults' social development; emphasis on verbal behavior in children's and adults' social development.

S550 Mathematical Models of Child Behavior 3 s.h.
Applications of mathematical models in developmental processes in general, with emphasis on mathematical models in developmental processes in general; prerequisite 594 or equivalent.

S551 Special Problems in Child Development 3 s.h.
Influence of stress on prevention is currently a major focus of educational and psychological research; emphasis on experimental and psychological research; prerequisite consent of instructor.

S552 Advanced Psychophysiology of Children 3 s.h.
Analysis of research on early development with special emphasis on cognitive and affective development; prerequisite 592PD or consent of instructor.

S553 Experimental Learning in Children 3 s.h.
Research and theory on acquisition by children of different responses in changing conditions; emphasis on research and theory on acquisition by children of different responses in changing conditions.

S554 Sensation and Perception in Children 3 s.h.
Research topics of interest to sensory psychologists.

S610 Child Development 3 s.h.
Methods in psychological study of infants and children; developmental norms, maturation-harmony, nature-nurture considerations, perceptual, learning and motivational processes, cognitive development, personality development, motoric development, effects of age, sex, culture and environment; same as Psychology 311.

S612 Basic Processes in Infant Behavior and Child Development 3 s.h.
Experiments on biological and psychological processes in children; emphasis on research on psychopharmacology, conditioning, discrimination learning, concept formation, memory, perception; prerequisite consent of instructor.

S615 Sensation and Perception in Children 3 s.h.
Research procedures and results bearing on sensory and perceptual processes in children; prerequisites 591 and Psychology 211 or equivalent.
Review of research on selected quantitative models applicable in child psychology; prerequisites: consent of instructor.

6:236 Seminar: Selected Problems in Social Development 3 a.h.
Review of selected topics; prerequisite: consent of instructor; may be repeated for credit with permission of instructor.

6:239 Theoretical analysis of learning and transfer in complex discrimination tasks; implications for the design of training programs, the understanding of human behavior and of animal behavior; prerequisite: 254h or consent of instructor.

6:390 Seminar: Memory in Children 3 a.h.
Selected topics in developmental aspects of memory functioning; may be repeated; prerequisite: 254h or consent of instructor.

6:392 Infant Learning and Perception 3 a.h.
Review and analysis of experimental research on learning capabilities and on the sensory and perceptual capabilities of young infants; includes consideration of research in instrumental conditioning, visual orienting, discrimination learning, habituation and orienting behavior; prerequisite: 5:201 or 31:232 or consent of instructor.

6:585 Practicum: Research in Child Psychology 0 cr.
Supervised experience in research laboratories.

6:590 Problems in Child Development 0 cr. or arr.
For child development majors; approval of problems required in advance of registration; consent necessary for permission to register.

6:911 Research in Child Development 0 cr. or arr.
These work for advanced degrees; consent instructor for permission to register.

Classics

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

Undergraduate Program

In its broadest sense, classics is the study of the ancient languages, literatures and cultures of the area surrounding the Mediterranean basin from approximately 2000 B.C. to 454 A.D. It embraces three civilizations: the Minoan-Mycenaean, Greek and Roman; two languages: Greek and Latin; and a geographical area including Europe, North Africa, Egypt and the Near East.

The aim of the Classics Department is to understand and to interpret the contribution of the ancient world to life in the present and to promote knowledge of the Classics is primarily humanistic in that it concentrates upon the aspects of man which have made him a civilized human being. An undergraduate degree in classics not only prepares one for secondary teaching, but serves also as a foundation for law, history, art, philosophy and religion, as well as for advanced work in classics. Some of our recent graduates have become secondary and university teachers; others have gone on to become lawyers, doctors, librarians, museum curators and bankers.

Undergraduate Requirements

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

Major in Greek

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

- 14:001 and 14:002 Elementary Greek 8 a.h.
- 14:011 and 14:012 Second-Year Greek 7 a.h.
- 14:171 Elementary Greek Composition 3 a.h.

The remaining hours are usually filled by third-year Greek, "Homer and Herodot," and fourth-year Greek, "Greece and Persia," and "5th Century Athens." A student majoring in Greek would graduate knowing not only how to read the Greek language, but also knowing some of the major works of Greek literature and something of the history of ancient Greece and the Near East of the seventh through the fifth centuries B.C., who most of the modern notions of politics, artistic and social life began.

Major in Latin

Thirty semester hours minimum are required, of which 24 must be in Latin language courses above 20:015, and which include 20:171 Elementary Latin Composition or its equivalent. For most undergraduates, the concentration will be on the era of the last century of the republic and the first century of the Roman empire, roughly the period from 133 B.C. to 44 A.D. when Rome established its hegemony over the Mediterranean basin and laid the foundations for law and the republican form of government which have persisted into the modern world.

Major in Classics (Greek and Latin)

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

Undergraduates in Greek, Latin or Classics are excused from four semester hours of the literature core requirement but must complete 11:001. (For the general requirements of the College of Liberal Arts, see "College of Liberal Arts." For the requirements of the Iowa Teacher's Certificates, see "College of Education.")

Honors

For exceptional students, two courses are offered in Honors Reading, one each semester of the senior year, for three semester hours of credit each semester. These credits are in addition to the 30 (or 36) semester hours required of majors in the Department. The readings and discussions are on either an ancient author or a field in ancient history or literature chosen by the student and the instructor. During the first semester the student presents an essay every other week; at the end of the second semester the student presents a long paper which is examined by at least three members of the Department. There are no admission requirements for any degree program offered by the Department.

Graduate Program

For the general requirements of the Graduate College, including the comprehensive examinations, see "Graduate College." Graduate students in classics may include in their program no more than six semester hours of courses numbered 102-160 and six semester hours of courses numbered 161-199.
M.A. in Greek, Latin or Classics

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

Candidates in Latin who have no Greek are normally expected to include at least elementary Greek in their programs. In addition, the course 14:201 or 20:201 Proseminar: Introduction to Advanced Study (three semester hours) is required. Special programs will be arranged for candidates who wish to prepare for teaching the classics in English (general education courses, world literature, etc.).

Ph.D. in Classics

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

Required courses are:
14:201 or 20:201 Proseminar: Introduction to Advanced Study
3 s.h.

One of each from the following two areas:

a. Ancient Art or Philosophy
   3 s.h.

b. Ancient Linguistics or Paleography
   3 s.h.

Latin Seminar
6 s.h.

Greek Seminar
6 s.h.

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

Special Facilities

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

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

Associated with the Department is the Classical Museum which contains a valuable collection of coins, vases and frag- ments in bronze from Mycenae, Pompeii and Herculanum.

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

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

The Faculty

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

Staff: professors Goldstein, Horrey; professor emeritus Nybakken; associate professors Alexander, Holtmark; assistant professors Bush, Fleckinger, Gardner, Jackson

Greek

Courses for Undergraduates Only

Students wishing to satisfy the B.A. foreign language requirement by studying Greek should take the following sequence of courses: 14:1, 2, 3, 11, 12.

14:1 Elementary Greek
4 s.h.

Fundamentals of Active Greek and basic concepts of Greek civilization; five meet-
ing per week.

14:2 Elementary Greek
4 s.h.

Continuation of 14:1; selections from Greek authors are read.

14:6 New Testament in Greek
3 s.h.

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

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

Reading of selected texts of Greek prose and poetry; prerequisites: 14:2 or equivalent.

14:17 Rapid-Year Greek
3 s.h.

Continuation of 14:11, which is prerequisite.

Courses for Undergraduates and Graduates

14:121 Homer and Hesiod I
3 s.h.

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

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

Continuation of 14:121, which is prerequisite.

14:161 Greece and Persia
3 s.h.

For students in fourth year of Greek: emphasis on Persian wars, voyage of the Argonauts, Alexander, Hellenistic period; general reading in Greek.

14:171 Greek Literature I
3 s.h.

Reading of selections from Homer, Hesiod, Archaic lyric poetry, Euripides' Andromache, Sophocles' Trachiniae, Aristophanes' Lysistrata and fragments of others.

14:172 Greek Literature II
3 s.h.

Reading of Aeschylus, Sophocles, Euripides, Plautus and additional readings in Greek; supplementary readings in English.

14:173 Greek Literature III
3 s.h.

Continuation of 14:172, which is prerequisite; changing intellectual climate of late 4th century B.C. and developments in Athenian democracy; selections from Thucydides, Xenophon, Theophrastus, Epicurus, Herodotus and fragments of the Sybils, Plato. Read in Greek; supplementary readings in English.

14:174 Greek Literature IV
3 s.h.

Continuation of 14:173, which is prerequisite; intellectual climate of 3rd century B.C., particularly the development of Hellenistic philosophy; selections from Plato, Aristotle, Demosthenes, Thucydides, Xenophon, Polybius, Livy, etc.

14:175 Greek Philosophy I
3 s.h.

Reading in pre-Socratic philosophy, earlier schools, Socrates, Plato, Aristotle.

14:176 Greek Philosophy II
3 s.h.

Reading in Stoicism, Epicureanism, and late Hellenistic thought (Cicero, Plutarch).

14:177 Comparative Literature
3 s.h.

Comparative literature course in ancient Greek, Latin and classical literature, especially with emphasis on the development of classical and medieval European literature.

14:178 Ancient Near Eastern History
3 s.h.

Reading in Far Eastern Civilization and Ancient History.

14:180 Hebrew History and Civilization
3 s.h.

History of the Hebrew nation from earliest times to the Babylonian Exile.

14:181 Hebrew Grammar
3 s.h.

Grammar, syntax, vocabulary, and composition.

14:182 Hebrew Readings
3 s.h.

Advanced readings of special author or topic leading to several short papers in first semester, a long paper in second semester; both courses required for Hebrew majors.

14:183 Private Tutorial
1 to 3 s.h.

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

14:184 Private Assignments
1 to 3 s.h.

For advanced students who are not majors in the Department; may be repeated.

Courses for Graduates

14:201 Proseminar: Introduction to Advanced Study
3 s.h.

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

14:202 Advanced Reading
1 to 3 s.h.

Open only to graduate students in the Department.

14:203 Indo-European Philology
3 s.h.

Exposure of comparative method as applied specifically to Greek and Latin, and study of phonological and morphological lore; some use of 20:203
Comparative Literature

Program Chairman: Alan P. Nagel
Department of Classics, B.A., Ph.D.

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

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

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

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

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

Course of Study
The major should comprise about half of the student's program. Majors are offered in classics, English, French, German, Italian, and Spanish. Courses should range over the entire history of that literature and should also involve a class study of the most important literary genres. The minor, requiring the study of at least two additional literatures, permits several choices: a student...
Students in comparative literature are expected to concentrate their studies primarily in departmental courses in the literatures of their choice and should show evidence of considerable work in foreign literature taken in the original. In addition, the courses and seminars listed below unify studies in several literatures.

Upper Division:

48:102 European Renaissance
3 s.h.
Study in sources of Renaissance, emphasis given to thematic and visual aspects, particularly in England, France, and Italy.

48:106 European Literature of the 15th Century
3 s.h.
International and national perspectives on literary movements, works, and northern Italian 1370's, sens. to 1513.

48:107 Romanticism and Style around 1800
3 s.h.
The rise of the novel, major Romantic movements, (particularly English and French) and the innumerable number of themes from around 1800 concerning nature of poetry, myth, reality, style, language, role of the artist, and in the works of society; sens. to 1812.

48:113 Literary Genres in European Literature
3 s.h.
A discussion of literary and functional selective genres (e.g., romance, lyric, drama, novel, etc.) sens. to 1812.

48:114 Theory and Traditions of Oral Literature
3 s.h.
An historical course centering on oral composition in ancient, medieval and modern study; sens. to 1576.

48:199 Individual Study
or, 15 s.h.

Primary for Graduate:

48:204 Seminar in Medievalism
3 s.h.
Baroque, rococo, and romanticism in European literature; and seminars in several aspects of the literature of the 15th century, with emphasis on the knowledge of some classical or modern foreign language.

48:206 Age of Enlightenment
3 s.h.
Sens. to topics in literature of the 16th century; emphasis on the knowledge of some classical or modern foreign language.

48:208 Age of Enlightenment
3 s.h.
Sens. to topics in literature of the 16th century; emphasis on the knowledge of some classical or modern foreign language.

48:208 European Romanticism
3 s.h.
Major poems in English, and contemporaneous Romance, with emphasis on poetics and the development of the novel in the 18th century; sens. to 1820.

48:208 European Romanticism
3 s.h.
Major poems in English, and contemporaneous Romance, with emphasis on poetics and the development of the novel in the 18th century; sens. to 1820.

48:211 Historical Background of Literature Periods
3 s.h.
Examination of general historical currents (political, religious, political, etc.) of one period in their relationship to literary arts of that period; sens. to 1976.

48:212 Library Research in European Literature
3 s.h.
Introduction to research techniques in European literature with emphasis on the knowledge of some classical or modern foreign language; may be repeated independently for credit with permission of instructor.

48:214 Libraries and Sources in European Literature
3 s.h.
Theory and practice of research as exemplified in major works romantic, tragic, lyric, novels, tales, in the oral traditions, and with reference to major literary currents and with emphasis on the knowledge of some classical or modern foreign language; may be repeated independently for credit with permission of instructor.

48:215 Patterns of Style and Literary Forms
3 s.h.
Comprehensive survey of European literature involving at least three bodies of work and exploring thematic patterns in individual selections and sequences.

48:220 Workshop in Comparative Literature
1-3 s.h.
Workshop course designed to study and appraise significant works in the field; sens. to 1576.

48:220 Workshop in Comparative Literature
1-3 s.h.
Workshop course designed to study and appraise significant works in the field; sens. to 1576.

48:222 Seminar in American Literature
3 s.h.
Seminar designed to focus on a particular area of the literature of the Americas; sens. to 1576.

48:223 Seminar in American Literature
3 s.h.
Seminar designed to focus on a particular area of the literature of the Americas; sens. to 1576.
46:293 Critical Theory: Plato to the Romantics
3 cr.
Theory of literature: emphasis on philosophical implications of theory arrived at in classical antiquity, Renaissance and Novecentury Europe up to the age of Romanticism.
46:294 Critical Theory: Cartesian to Crane
3 cr.
Theory of literature from Romanticism to present.

Comparative Seminars
Fluent reading knowledge of at least one foreign language is prerequisite for 46:295, for all other seminars students should also have reading knowledge in a second foreign language.
46:295 Comparative Approaches or, art.
Setting for testing and evaluation of methods available to literary analysis; may form part of a seminar; see 46:297 below.
46:297 Comparative Approaches II or, art.
46:290 Seminar: Literature: Native American or, art.
The concept of "Indians" and its application to literary relations between writers, movements, and literary trends in various countries.
46:304 Seminar: Special Topics in Medieval and Renaissance Literature or, art.
Comparative problems in Medieval and Renaissance literature; topics differ from year to year.
46:305 Seminar: Stylistics or, art.
Same as 46:297.
46:307 Seminar: Topics in Dichtersammlungen or, art.
Topics in manuscripts and collections in medieval literature; does not count toward major.
46:308 Seminar: Teaching of Comparative Literature or, art.
Methods and problems in teaching of comparative literature; does not count toward major.
46:309 Seminar: Special Topics in Modern Literature or, art.
Topics in recent and contemporary literature in England, the United States and on European continent.
46:310 Seminar or, art.
46:310 Thesis or, art.

Computer Science
See "Mathematical Sciences"

Dental Hygiene
Department Chairperson: Pauline Brees
Degrees Offered: B.S., M.S.

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

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

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

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

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

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

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

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

Graduate Program

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

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

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

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

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

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

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

Special Programs

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

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

Admission Requirements

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

- a bachelor's degree from an accredited college or university, with content equivalent to that required at Iowa;
- a 2.5 minimum grade-point average (4 = A) for all previous college work;
- previous practical experience in some aspect of dental hygiene; and
- satisfactory performance levels on the Aptitude Test of the Graduate Record Examination (GRE).

Staff:

associate professor Brine; assistant professors Buchanan, Sistry, Williams; instructors Burns, Meacher, Schwinds, Taylor

Courses for Undergraduates

683/631 Dental Hygiene Core I 5 s.h.

Team-teaching approach used to integrate basic dental hygiene theory and clinical skills; didactic material and practical experiences related to complete oral prophylaxis emergency procedures, oral inspection, principles of instrumentation and patient interview procedures; how, why, and when to use instruments and properties of dental materials; integration throughout course clinical experience includes practice on student volunteers and clinical patients

683/632 Dental Hygiene 5 s.h.

Continuation of 683/631, with emphasis on application of advanced clinical dental hygiene procedures; dental decay and periodontal disease; application and use of dental materials and basic principles of operative dentistry

683/633 Clinical Dental Hygiene 5 s.h.

Lectures, readings, seminars and clinical experiences related to theory and practice of dental hygiene; approximately 30 hours per week spent in clinical setting; students advance clinical skills in oral prophylaxis, subgingival coverage, filling alloy restorations, dietary counseling and oral health care instruction; lectures and discussions on ethics and practice management, including dental hygiene licensure, ethics and jurisprudence, office procedures, and treatment control and scientific readings in each clinical related topics as oral physiography devices, dietary counseling for plaque control and critical supplemental procedures correlated with clinical experiences 5 or 10 s.h.

686/104 Community Dental Health 6 or 10 s.h.

Dietetic presentations, readings, discussions and field experiences related to theory and practice of community dental health; lectures are devoted to basic principles of community health education, student and utilization of educational media and operations of educational mediums; public health structure, organization, funding, demography and dental epidemiology; and community field experiences; patients with physical and psychological handicaps provide opportunity to develop special techniques for teaching preventive measures and providing clinical service; scheduled weekly group discussions on current pertinent scientific literature, clinical

686/111 Independent Study 0-11 s.h.

Design for student who wants to pursue additional study to explore career interest in dental hygiene education, research or public health

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Courses for Graduates
30:109 Readings in Documentary Chinese
3 s.h.
30:114 Study of the Written Character
3 s.h.
Literature
9 s.h.
30:141 Survey of Chinese Literature I
3 s.h.
30:142 Survey of Chinese Literature II
3 s.h.
30:143 Contemporary Chinese Literature
3 s.h.
30:144 Chinese Poetry
3 s.h.
30:145 Poetry in Chinese Painting
3 s.h.
30:146 Classical Chinese Fiction
3 s.h.
30:148 Chinese Drama
3 s.h.
30:149 Chinese Theatre
3 s.h.
30:151 Modern Chinese Fiction
3 s.h.
Civilization
6 s.h.
30:165 Asian Civilization: China
3 s.h.
30:1609 History of the Chinese Language
3 s.h.
30:132 History of China to circa 1860
3 s.h.
30:134 History of Modern China
3 s.h.
30:155 Ethnology of China
3 s.h.
30:157 Chinese Calligraphy and Painting
1 s.h.
30:158 Chinese Calligraphy and Painting
1 s.h.
30:159 Art of China
3 s.h.
30:161 Religion in China
3 s.h.
30:174 Introduction to Chinese Philosophy
2-3 s.h.
External Concentration (Recommended)
6-9 s.h.

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

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

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

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

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

Language
30:101 Elementary Chinese
6 s.h.
30:102 Elementary Chinese
6 s.h.
30:103 Second-Year Chinese
6 s.h.
30:104 Second-Year Chinese
6 s.h.

Besides the above courses, two courses from the following are required:
30:107 Readings in Modern Chinese
3 s.h.
30:108 Readings in Classical Chinese
3 s.h.

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

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

Language
30:121 Elementary Japanese
6 s.h.
30:122 Elementary Japanese
6 s.h.
30:123 Second-Year Japanese
6 s.h.
30:124 Second-Year Japanese
6 s.h.

Besides the above courses, two courses from the following are required:
30:108 Readings in Classical Japanese
3 s.h.
30:109 Advanced Readings in Modern Japanese
3 s.h.
30:113 Japanese Speech
3 s.h.
30:115 Japanese Composition
1 s.h.
30:119 Japanese-English Translation
3 s.h.

Literature
30:143 Survey of Classical Japanese Fiction
3 s.h.
30:144 Survey of Classical Japanese Poetry
3 s.h.
30:145 Survey of Modern Japanese Fiction
3 s.h.
30:146 Survey of Modern Japanese Poetry
3 s.h.
30:150 Japanese Literature and the West
3 s.h.
30:152 Japanese Dramatic Literature
3 s.h.

Major course of Classical Chinese Literature
Civilization
6 s.h.
30:066 Asian Civilization: Japan
3 s.h.
30:114 Study of the Written Character
3 s.h.
Honors

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

An Honors candidate must complete the two-semester sequence 391/392 Undergraduate Honors Tutorial (Chinese) or 391/392 Undergraduate Honors Tutorial (Japanese) during the junior year or enroll in 391/392 Senior Honors Thesis (Chinese) or 391/392 Senior Honors Thesis (Japanese) during the senior year and prepare a thesis on the language or literature in his or her major field under supervision of an advisor; and maintain at least a 3.0 average for all Honors courses and all coursework taken the senior year.

A student who fulfills these requirements will receive the B.A. degree "with Honors."

M.A. Program in Chinese Language and Literature

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

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

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

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

Program B, without thesis, comprises 36 semester hours of coursework and would lead to a terminal M.A. degree. A comprehensive examination is administered during the candidate's last semester of registration and an oral examination given on the thesis where a thesis is included in the program. All candidates are expected to fulfill the general requirements of the Graduate College.

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

Program A (M.A. with thesis)

Advanced Chinese (beyond the first two years) 9 s.h.
Method of Biocultural Research 3 s.h.
One of the following courses:
Introduction to Chinese Linguistics 3 s.h.
History of the Chinese Language 3 s.h.
Seminar in Chinese Linguistics 3 s.h.
Advanced courses in Chinese literature and civilization 8-11 s.h.
Thesis 4-6 s.h.
Total 30 s.h.

Program B (M.A. without thesis)

Advanced Chinese (beyond the first two years) 9 s.h.
Method of Biocultural Research 3 s.h.
Advanced courses in Chinese literature and civilization 9-12 s.h.
One of the following courses:
Introduction to Chinese Linguistics 3 s.h.
History of the Chinese Language 3 s.h.
Seminar in Chinese Linguistics 3 s.h.
Additional courses in education, history, philosophy, art, journalism, linguistics, etc., depending upon the student's interest and objective. 3 s.h.
Total 36 s.h.

Ph.D. Minor in Chinese

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

The Oriental Library Collection

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

East Asian Languages and Literature

3 s.h.

Courses Primarily for Graduates

East Asian Languages and Literature

3 s.h.

Courses Primarily for Undergraduates

East Asian History and Culture

3 s.h.

Courses Primarily for Graduates

East Asian History and Culture

3 s.h.

Courses Primarily for Undergraduates

East Asian History and Culture

3 s.h.

Courses Primarily for Undergraduates

East Asian History and Culture

3 s.h.

Courses Primarily for Undergraduates

East Asian History and Culture

3 s.h.

Courses Primarily for Undergraduates

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3 s.h.

Courses Primarily for Undergraduates

East Asian History and Culture

3 s.h.

Courses Primarily for Undergraduates

East Asian History and Culture

3 s.h.
Economics
Department Chair: Jerald Bernard
Degrees offered: B.A., B.B.

Economics is the study of how people determine what they will produce, consume, buy and sell. It is also concerned with the coordination of such activities between individuals and groups within and across societies. Economists examine such problems as unemployment, economic growth and development, inflation, the balance of trade and economic welfare. The University of Iowa offers three undergraduate degrees in economics. One, the Bachelor of Business Administration, is offered through the College of Business Administration and is described in that section of the Catalog. The Bachelor of Arts degree in economics is designed to allow the student maximum flexibility in attaining a well-rounded liberal arts education. The Bachelor of Science degree has more mathematical content and is designed to meet the needs of students considering postgraduate work in economics or related business and technical fields. The Bachelor of Science degree is also recommended for Honors students.

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

Courses Outside the Department

225-23 Elementary Probability and Statistics 3 s.h.
225-2 and 225-8 Quantitative Methods I and II 8 s.h.

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

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

Courses Outside the Department

225-23 and 225-26 Calculus
225-100 Probability and Statistics

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

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

Graduate Study
Various programs of graduate study in the Department of Economics are outlined in "Economics" under "College of Business Administration."

Staff: professors Cotterill, Krause, (Murray Professor), Lloyd, Morgan, Nordquist, Peik, Wu; professor emeritus Olson; associate professors Albrecht, Balch, Barnard, Jefferis, Pogue, Ruffle, Siebert, Sjöqvist, Swanson; assistant professors Denti, Joseph, Reischl, Wesslin, Wissamson

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

Education
See "College of Education."

English
Department Chair: John C. Gerber


The Undergraduate Program

The English Major
The general purpose of the English major is to provide a program of humane learning, principally through the study of language and literature and the discipline of writing. The chief aim of the study of literature, the largest part of the major, is to help the student enlarge his experience and thus to liberate him from the parochial outlook of his own time and place. The study of literature should provide a constantly increasing awareness of form and value in human experience, as shaped by language. The chief aim of the discipline of writing is to help the student explore the relationship between experience and meaning, as these are structured by language, and to encourage him to define his ideas and his relationships with other human beings as precisely and forcefully as possible. The chief aim of the study of language is to help the student
exercise historically and scientifically the possibilities and limitations of language.

Because the major is designed to help students see language and literature in the entire symbolic process, it enables him to perceive how man projects his feelings and ideas and values in such media as painting, sculpture, music, dance, film, television, architecture and the theatre, as well as in literature.

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

In terms of mastering a body of literary knowledge and skill, the major should acquire a critical vocabulary sufficient to call his attention to major problems of reading and to express his understanding of literary texts. He should begin to develop a historical sense about literature and should experience enough older literature to know that contemporary writers exhibit the continuity of culture. He should read substantial amounts of literature of his own time and nation as well as the major older works of his own language. He also should acquire some acquaintance, at least in translation, with the Bible, classical literature, major works in European languages and a variety of materials from other cultures.

The major should be able to discuss literature orally, having learned to fuse his ideas with the ideas of others to fashion insights not previously available to either. He should be able to give readings of texts. He should also be able to undertake independent study. Especially he should be able to define problems so that appropriate evidence for solution can be identified.

The only absolute requirement for the major in English is 30 hours of work in English, as specified by the Department of English, including at least nine semester hours of work in courses dealing principally with literature written before 1800. Otherwise the student works out a program with his adviser that seems best to meet his special needs and interests. Early in his junior year he is asked to choose a special area of concentration.

The pamphlet On Designing an English Major gives detailed help in preparing such a plan. In each case the student is advised to select a broad chronological range in his study of literature, a sampling of several genres and some background material in literatures of other cultures, particularly in Biblical and classical literature. He is advised to seek close experience with language by taking courses in linguistics and writing. He is encouraged to take work that will enrich his intellectual and historical background and that will enable him to relate literature to the fine arts and other means by which man communicates his experience. Finally, students contemplating graduate study in English or teaching as a career are counseled to include courses which will be especially relevant to their later work. Typically an English major takes about 45 semester hours in English.

English and Education

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

Students planning courses to help them in their first teaching experiences should remember that they will have to be able to work with details of expression in English. They will probably need advanced training in writing—nondiscursive, poetic and fiction—are all important—or rhetoric or linguistics or all of these.

Their literary study should emphasize a range of close reading experiences in different kinds of literature as well as the methods for exploring a literary text. Especially, they should remember the importance of a broad educational experience for their own students and as a basis for understanding the interests of their students. Finally, those undertaking a career in teaching should remember that an undergraduate degree represents minimal training for good teachers, so they should plan a program which will permit graduate study at a later time.

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

Students who are seeking certification for secondary teaching in English must complete 20 semester hours of English education electives in rhetoric, speech or writing. The program must include a course in each of these areas: advanced composition, Shakespeare, American literature and British literature of the nineteenth or twentieth century. In addition to the 20 semester hours of English, the student is required to take Methods of Teaching High School English in the College of Education. While this program meets minimum requirements for certification, the Department believes that some additional training in English should have considerably more training in the field.
The Citation for Excellence in Creative Writing

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

Any major may include his program credit for up to eleven semester hours in 8:11 Fiction Writing and four semester hours in 8:12 Poetry Writing, but only students who are admitted on a competitive basis to the Undergraduate Poetry or Fiction Workshops (8:83 and 8:86) may be considered for citations. Students in these workshops, if they wish the citation, must submit a collection of poems or stories to the Undergraduate Creative Writing committee at least six weeks before the end of their final semester. Otherwise, their programs follow the same patterns and procedures as those taken by the regular majors.

The English Major with Honors

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

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

The Literature Seminars

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

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

Graduate Programs

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

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

Master of Arts

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

Master of Arts and Specialist in Education

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

Master of Fine Arts

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

Doctor of Philosophy

Requirements include formal admission to candidacy by a vote of the Department; a high level of competence in two foreign languages and their literatures; a comprehensive examination (written and oral) covering two historical periods of English and/or American literature and one special subject; distributed coursework in three other historical areas; three seminars; coursework in linguistics and the history of criticism; a dissertation which may be either a scholarly study or a piece of imaginative writing; and a final examination in defense of the dissertation. All doctoral candidates are required to gain teaching experience, preferably in the Rhetoric and Core Literature programs of the College of Liberal Arts.
English


Courses
Courses below 100 are primarily for undergraduate English majors. Courses numbered 100-199 are general interest courses for nonmajors as well as for undergraduate majors and English graduate students wishing to fill out gaps in their undergraduate programs. Courses numbered 200-299 are designed for graduate students planning to teach in high school or junior college, but appropriate for any person wishing to have guided and extensive reading within a specific area. Courses numbered 300-499 are primarily for students working toward the Ph.D., but appropriate for students working toward a master's degree and intending in the future to continue toward the higher degree. A complete description of all courses to be offered in a given semester may be obtained in the English Department office immediately preceding the beginning of that semester.

For Undergraduates

General Interest Courses
Beginning fiction courses, primarily for students not majoring in English, although credit may be applied to the requirements for the major:
81 Modern Fiction 3 a.h.
82 Modern Theory 3 a.h.
83 Modern Trends 3 a.h.
88 Classical and Biblical Literature 3 a.h.
89 British Literature 3 a.h.
99 Shakespeare 3 a.h.

Introductory Courses in Critical Reading
Limited-enrollment courses primarily for majors, but open to anyone. These courses are designed to illustrate representative problems in interpreting and evaluating literature. 811 and 812 are taught with emphasis on the techniques of reading and listening;
811 Understanding Fiction 2 a.h.
812 Understanding Poetry 2 a.h.
825 Introduction to the Criticism of Literature 3 a.h.

Representative Works Courses
Basic limited-enrollment courses primarily for majors, but appropriate for any undergraduate. Each course concentrates on ten to twelve major works from time listed in course title; works chosen for their interest, their representation of literature of time and their role in enhancing our ability to read:
821 The English Novel, 1550-1640 3 a.h.
822 The English Novel, 1640-1830 3 a.h.
823 The English Novel, 1830-2000 3 a.h.
824 The English Novel, 1900-2000 3 a.h.
825 The English Novel Since 1990 3 a.h.

Expository Writing Courses
Emphasizing communication in writing for all undergraduate programs. May be completed in the freshman year or it may be substituted for Writing Workshop. May be repeated for credit for improvement in writing:
810 Expository Writing 3 a.h.
815 Theory of Rhetoric 3 a.h.

Creative Writing Workshops
Open to undergraduates only by permission of instructor. Manuscripts should be submitted to Writers Workshop office prior to registration:
826 The English Writer Workshop Fiction 3 a.h.
826 The English Writer Workshop Poetry 3 a.h.

Honors Courses
Open only to students in the undergraduate Honors program and to other students with special permission of instructor:
826 The History of the United States 3 a.h.
826 Honors Proseminar 3 a.h.

Literature Semester Courses
Limited-enrollment, two-term literature courses emphasizing the reading of whole texts, discussions, 10 to 12 papers other work as detailed in separate Departmental announcements. Pre-registration required. Literature Semester 1 satisfies all major requirements for literature before 1800; students should have taken at least one course-level literature course before registering in either course:
829, 830, 831, 832 English Literature Before 1900 12 a.h.
836, 837, 838, 839 American and Contemporary British Literature 12 a.h.

Independent Study Courses
May be arranged by the student with instructor of choice prior to registration; ordinarily the student should consult instructor from whom he did or she previously took a course:
828 Undergraduate Honors Project 3 a.h.
839 Special Project for Undergraduates 3 a.h.

For Undergraduates and Graduates

Literature and Culture Courses
Primarily for undergraduates and graduate students, these courses are designed to cover major works and authors within the context of the social, political, intellectual and artistic movements of their time. Literary history is basic part of the work, but main goal is to show literature in the whole course of the intellectual thought of the time. Students who have established backgrounds in history or related arts especially welcomed. Undergraduate majors in English urged to include at least one course of this type in their junior year or major:
8102 Literature and the Culture of the Renaissance 4 a.h.
8103 Literature and the Culture of the 19th Century England 4 a.h.
8104 Literature and the Culture of the 19th Century England 4 a.h.
Great Books Courses

6:151 Masterpieces of the Renaissance
6:152 Significant Books in American Civilization I
6:153 Significant Books in American Civilization II

Basic Linguistics

6:160 Introduction to Linguistics
6:161 Modern English Grammar
6:162 Structure of English
6:163 Introduction to Historical Linguistics
6:164 Principles of Comparative Linguistics and Generic Classification of Languages

Writing Courses

6:171 Advanced Expository Writing
6:172 Technical Writing
6:173 Extended Prose

Pruning Design Courses

6:180 The Hand-Painted Books: Problems in Design and Production
European Literature and Thought

Advanced Linguistics
- 2559 Very Modern English Language and Literature
- 2561 Spanish Linguistics
- 2567 Problems in English Linguistics
- 2568 Introduction to Language Data Processing
- Seminar in Linguistics 2568/14

Bibliography
- 2560 Literary Tools and Research Methods

Graduate Seminars
Seminars represent the most advanced work in English and American literature and in related disciplines. Permission of a given seminar may vary from semester to semester; contact the department chair for details. In order to register for a seminar, students must have completed at least 60 semester hours and must have consent of instructor.

2430 Seminar: Medieval Literature
2435 Seminar: Middle English Literature
2445 Seminar: Chaucer
2455 Seminar: Renaissance Satirical Literature
2465 Seminar: Renaissance Humanistic Literature
2475 Seminar: Renaissance Dramatic Literature
2485 Seminar: Shakespeare
2495 Seminar: 17th-Century Humanistic Literature
2515 Seminar: 17th-Century English Literature
2525 Seminar: 18th-Century English Literature
2535 Seminar: 18th-Century English Drama
2545 Seminar: 19th-Century English Literature
2555 Seminar: Elizabethan Theatre History
2565 Seminar: British Drama
2435 Seminar: Milton
2445 Seminar: Renaissance Prose
2455 Seminar: Renaissance Poetry
2465 Seminar: Renaissance Works
2475 Seminar: Shakespeare
2485 Seminar: 17th-Century Drama
2495 Seminar: 17th-Century English Works
2505 Seminar: 18th-Century English Works
2515 Seminar: 18th-Century English Drama
2525 Seminar: 19th-Century English Literature
2535 Seminar: 19th-Century English Poetry
2545 Seminar: 19th-Century American Literature
2555 Seminar: American Romantic Literature of the 19th Century
2445 Seminar: 19th-Century American Literature
2455 Seminar: American Realistic Literature of the 19th Century
2465 Seminar: Modern Letters
2475 Seminar: Modern British Literature
2485 Seminar: American Realistic Literature of the 20th Century
2495 Seminar: Modern British Drama
2505 Seminar: Modern French Literature
2515 Seminar: Modern European Literature
2525 Seminar: Modern European Drama
2535 Seminar: Modern American Literature and Culture
Seminar in American Civilization: 2435
2485 Seminar: Problems in Theatre
2495 Seminar: Study in Whatmore
2495 Seminar: Study in Whatmore
2475 Seminar: English Language and Other Intellectual Disciplines
2485 Seminar: Analytical Bibliography and Technical Criticism

Independent Study
Students registering for independent study courses must have consent of instructor for topic and number of credit hours prior to registration.

2505 Readings in Medieval Literature
2515 Readings in 17th-Century Literature
2525 Readings in 19th-Century Literature
2535 Readings in American Literature
2545 Readings in 20th-Century Literature
2555 Readings in 20th-Century American Literature
2565 Readings in 20th-Century American Literature

Program Chair: Professor Joseph E. Baker

European Literature and Thought

Program Chair: Professor Joseph E. Baker

Degree offered: B.A.

European literature and thought courses are open to juniors, seniors, and graduate students from any department. A variety of opportunities is offered to bring up ideas under question. No technical background in history, philosophy, or literature is necessary. Most courses meet three hours a week, and each course may be taken independently.

The courses are conducted by round-table discussions. Some of the important issues of contemporary time are exploded and evaluated through a basic reading list of outstanding works. Two or more instructors from various disciplines such as literature, philosophy, history, fine arts, and the sciences, guide the discussions, drawing in their specialized knowledge and particular methods.

Undergraduate Major
A major in European literature and thought serves as a basis for a liberal education and requires a student for further work in the special arts of his choice. The major is set up to provide breadth of specialized knowledge and training. It is ordinarily obtained under the specialization requirements of a single department.

Most students can major in this area and still have room for earning teaching certificates in one or more related departments. Many can satisfy the requirements for a double major in this program and in some single department also.

Requirements for the Major
These specific requirements are in addition to the general requirements of the College of Liberal Arts:

European literature and thought (round-table courses) 12 s.h.
History, social sciences 12 s.h.
Philosophy, religion, history of science 12 s.h.
Literature of England and of the Continent 12 s.h.
Foreign language: European; one semester beyond the second year (Courses in foreign language in the original language may also be used to satisfy the requirement in literature) 3 s.h.

Students considering a major in European literature and thought should consult with the chairman before the end of the sophomore year.

European Literature and Thought
Honors

The degree of Bachelor of Arts with honors may be earned by superior students who undertake a further program of independent study. To be admitted as a candidate for Honors, the student must have the endorsement of the chairman of the program in European literature and thought.

Staff: professors Aspl (French and Italian), Baker (English), Bergson (Law), Davis (Political Science), Duke (Chemistry), Fehling (German), Harlow (Business Administration), Obrecht (Music), Scharffenberg (Religion), Schering (Art), Stoltz (Psychology), Wahlke (Political Science), Wilneth (Sociology) associated professors Cameron (Speech and Dramatic Art), Beagle (Zoology), Hopkins (Law), Hamley (English), ter Haar (German); assistant professor Klein (Physics)

Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Time</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>321/1 The Pursuit of Happiness</td>
<td>2 to 4 a.m.</td>
<td>Treatments of religious and emotional suffering in various types of human experience by Aristotle, Frege, Collie, Montaigne, Voltaire, Stendel, Servis, etc.</td>
</tr>
<tr>
<td>322/1 The Good Society</td>
<td>2 to 4 a.m.</td>
<td>Treatments of religious and emotional suffering in various types of human experience by Plato, Socrates, Machiavelli, Shakespeare, Locke, Gibbon, Marx, recent fiction and modern fiction.</td>
</tr>
<tr>
<td>323/1 Iiles of the Contemporary World</td>
<td>2 to 4 a.m.</td>
<td>Treatments of religious and emotional suffering in various types of human experience by Plato, Socrates, Machiavelli, Shakespeare, Locke, Gibbon, Marx, recent fiction and modern fiction.</td>
</tr>
<tr>
<td>324/4 Judaism and the Nature of Man</td>
<td>2 to 4 a.m.</td>
<td>Relationship of scientific to social and humanistic thought</td>
</tr>
<tr>
<td>325/1 Farm and Mill in the Arts</td>
<td>2 to 4 a.m.</td>
<td>Relationship of scientific to social and humanistic thought</td>
</tr>
<tr>
<td>326/4 Roots of Modern Culture</td>
<td>2 to 4 a.m.</td>
<td>Relationship of scientific to social and humanistic thought</td>
</tr>
<tr>
<td>327/5 Special Projects, etc.</td>
<td>cr. aw.</td>
<td>Relationship of scientific to social and humanistic thought</td>
</tr>
<tr>
<td>328/1, 162 Independent Study for Honors</td>
<td>2 to 4 a.m.</td>
<td>Either semester may be taken separately; two semesters (totaling six semester hours) are taken concurrently, required of Honors candidates</td>
</tr>
</tbody>
</table>

French and Italian

Department Chairman: John T. Reinhagel, Jr.  
Degrees offered: B.A. (French or Italian), B.A. (French), Ph.D. (French)

The purpose of the undergraduate program is to give the student a firm foundation in the language, literature and culture of the countries represented. The four-year course of language courses offers training in the skills necessary to speak, read, write and understand the language at a high level of accomplishment. The specialized courses in literature and civilization, taught in the foreign language, introduce the student to the intellectual and cultural climate of France and Italy and provide a historical perspective for the contemporary life.

About half of the French majors combine study in their specialized areas with secondary education and secure jobs in high school teaching. Others enter various professional careers, business and government service, professional schools (such as law and library science) and graduate school in a branch of the humanities like French, political science or comparative literature. The latter group almost invariably prepare for the M.A. or Ph.D. with junior/community college, college or university teaching as a goal.

Undergraduate Programs

The undergraduate major is expected to develop increasingly sophisticated skills in the written and spoken language. Course work in literature and culture involves a close reading of a wide variety of works followed by analyses and discussions in the language which are designed to sharpen the student's critical approach to the material.

The major in French requires a minimum of the courses 3:27-28 and 3:111-112 second- and third-year Composition and Conversation, and either 3:25 French Pronunciation or 3:157 French Pronunciation and Discourse. In addition the student will elect four courses in literature at the 100 level and at a fifth in either fourth-year composition, literature, civilization, contemporary France or the French Film.

The minimum requirements for a major in Italian are 18:11 Intermediate Italian, 18:12 Advanced Composition and Conversation; 18:10/5 Introductory to Italian Literature (given in Italian); 18:11-2 Dante and His Times; and either 18:101 Literature of the Nineteenth Century or 16:102 Literature of the Twentieth Century (both given in Italian).

The Department participates in the Honors program. In cooperation with the other regents' institutions of Iowa, a summer study program is sponsored at the Université de Caen.

Graduate Program

The M.A. and Ph.D. in French are professional degrees which prepare the candidate for teaching at the college or university level.

Appointments

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

Several exchange assistantship agreements with the French Ministry of Public Education and the Université de Poitiers make it possible to provide a limited number of graduate student one year residence in France.

Requirements

Candidates for advanced degrees must have completed the equivalent of the undergraduate major in French. Deficiencies in previous training may be removed by taking appropriate courses.

Master of Arts

Three different programs are offered leading to the Master of Arts.
Master of Arts with Thesis
This program requires a minimum of 30 semester hours, of which six may be taken in 9277 (thesis supervision), the passing of a written and oral examination, and the defense of a thesis. The course of study must include four semester courses in literature at the graduate level, 9:137 French Prose, 9:138 French Poetry, and Option, and 9:209 and 9:210 Advanced Composition and Conversation. Candidates may occasionally take courses in related fields.

Master of Arts without Thesis
The requirements for this program are identical to those for the M.A. with thesis; except that the candidate must fulfill the 30-semester-hour requirement in regular coursework.

Master of Arts in French Education
This is an advanced degree intended primarily for prospective secondary and junior college teachers. Requirements include a total of 36 semester hours at the advanced level, of which eight may be taken in education or related fields and a minimum of nine semester hours of graduate coursework in French literature. Other suggested courses include 9:153 and 9:154 fourth-year Composition and Conversation, 9:209 and 9:210 Advanced Composition and Conversation, 9:113 and 9:114 French Civilization, 9:110 Methods: High School Modern Foreign Language, 9:131 Language Laboratory Procedures, 9:132 Contemporary France, and 9:157 and 9:158 French Pronunciation and Dictation. Candidates must pass a final examination in French education and related fields.

Doctor of Philosophy
The Ph.D. degree in French is awarded, after completion of at least three years of graduate work, of which one must be spent in residence at the University, the passing of a comprehensive examination and the oral defense of a dissertation. The dissertation is granted primarily on the basis of achievement rather than on the accumulation of semester hours of credit. Candidates must demonstrate early their ability to undertake independent investigation by completing two research papers in connection with courses taken.

Specific requirements for the Ph.D. in French must include 9:221 and 9:222 Old French, proficiency in a foreign language other than French, and coursework in a second related field defined as three graduate courses (minimum of eight semester hours) in that field. The choice of language and the specific courses in the related field are to be determined by the Department according to individual needs.

In pursuing the program, coursework and individual reading must be designed to impart a good knowledge of the history of the French languages, their literature and related civilization from medieval to modern times; provide adequate experience in a related area of the humanities; and develop the capacity for critical analysis of literary texts. Graduate students working toward an advanced degree are required to spend one year in teaching as graduate assistants in the Department.

The Faculty
Faculty members in French and Italian bring to the classroom a wide variety of teaching experience and in many cases are recognized nationally and internationally in their fields of specialization. Each period of French Literature—from medieval studies to contemporary literature—is represented by at least one scholar whose publications enable him to direct lecture and dissertation courses in his or her field. The Department is particularly strong in contemporary French literature, with three senior faculty members in that field. Biographies of nine of the 13 graduate faculty are published in the Directory of American Scholars (Volume III, 1969).

Staff: professors Aeppl, Cerreta, O'Gorman; professors emeriti Cohn, LeVola, Raterman; associate professors Groena, Horsley, Ikayan, Northcote, de St. Victor; assistant professor Sartres, Tate, Wayman; assistant professor emeritus Kulika; associate professor Fransen, Laboratory Director: Winston J. Reese

French Courses

French for Undergraduates
Students who have had no experience with French through study or foreign residence are required to take placement tests. If students with two years of high school French place in 9:1, four-hour sections will be added to their graduate requirement.

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

811 Elementary French 4 a.h.
For students who need no knowledge of French
825 Elementary French 4 a.h.
Prerequisite: 9:1 or equivalent
935 French Literature of Commitment 4 a.h.
Basics of 15th-16th-century literature in French; may be taken as part of core literature
11 Intermediate French 3 a.h.
Recommended for students who plan to take secondary school courses. Students who plan to take secondary French must have completed this course.
893 French Pronunciation 1 a.h.
912 intermediate French 3 a.h.
Recommended for students who plan to take secondary school courses. Students who plan to take secondary French must have completed this course.
927 Second-Year Composition and Conversation 4 a.h.
Recommended for students who plan to take secondary school courses. Students who plan to take secondary French must have completed this course.
937 French Literature of Commitment 4 a.h.
811, 825, 893, 912, 927, 937, 942 A.R.
938 Second-Year Composition and Conversation 4 a.h.
825 French I 4 a.h.
835 French II 4 a.h.
845 French III 4 a.h.
857 Spanish I 3 a.h.
912, 927 French I 4 a.h.
927 French II 4 a.h.
937 French III 4 a.h.
942 French IV 4 a.h.

Introduction to French Literature

801 Introduction to French Literature 3 a.h.
From ancient works to end of eighteenth century; given in French for French majors, in English for others; prerequisites: 912, 927, 937 or equivalent
802 French Literature to French Revolution 3 a.h.
From 16th to 18th centuries; given in French for French majors; in English for others; prerequisites: 912, 927, 937 or equivalent
General Science
Program Head: Robert C. Vager
Degrees offered: B.A., B.S.

The general science major is designed primarily for students interested in a professional area requiring a background in more than one science discipline. Specific programs exist for each professional area which meet the same basic requirements for graduation. Students not interested in one of the professional areas must meet with an advisor to structure a specific program. Completion of random courses will not meet the requirements.

Minimum requirements for the general science degree involve the selection of courses from three of these science departments: Chemistry, Geology, Physiology/Astronomy, Botany, Zoology and Mathematics. Two options are available: completion of 20 semester hours in one department and eight semester hours in each of two other departments; or completion of 16 semester hours in one department, 12 semester hours in a second department and eight in a third. Earth science and life science core courses may not be used as part of the 12-, 16- or 20-semester-hour sequence, but either may be used to fulfill an eight-semester-hour requirement. At least 10 semester hours must be completed in residence.

The B.A. requires completion of a minimum of four semesters of college-level study totaling not less than 12 semester hours in German, French or Russian. The B.S. requires eight semester hours of one of those three languages. The student's advisor can approve the selection of another language if there are circumstances making such a choice desirable. Students in the B.S. program must complete a minimum of 40 semester hours of science credit.

Engineering-General Science Combination
(B.S. in engineering; B.A. in liberal arts)
Coordinator: Donald H. Madsen

Mathematics
223M-20 Elementary Functions 3 s.h.
223M-25-6 Calculus I-II 8 s.h.
Electives in mathematics (as prescribed by the various departments of the College of Engineering) 9 s.h.

Physics
19:17-18 Introductory Physics I and II 1.5 s.h.

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

Total required course: 36 s.h.

Medical Technology

Directors: John A. Koeke (VA Hospitals), Michael L. O'Connor (University Hospitals)

Chemistry
4:11 and 4:6 Principles of Chemistry I and II 6 s.h.
4:11 Elementary Quantitative Analysis 4 s.h.
4:11-122 Organic Chemistry I-II 6 s.h.

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

Mathematics
225M-3 Introduction to Statistical Methods 3 s.h.
225M-4 College Algebra 4 s.h.
(More advanced mathematics courses may be substituted)

Other Science Requirements
61:156 General Microbiology 4 s.h.
Total required courses 35-40 s.h.

Nuclear Medical Technology
Coordinator: R. E. Peterson

Chemistry
4:1 and 4:4 Principles of Chemistry I-II 6 s.h.
4:11 Quantitative Analysis 4 s.h.
4:12-122 Organic Chemistry I-II 6 s.h.

Zoology
37:1 Principles of Animal Biology 5 s.h.
37:110 Principles of Human Genetics 3 s.h.
or
37:110 Fundamental Genetics 4 s.h.

Physics
29:1-2 College Physics 8 s.h.

Mathematics
225M-2-3 Mathematics Techniques I-II 6 s.h.
(More advanced mathematics courses may be substituted)

Other Science Requirements
60:1 Elementary Human Anatomy 4 s.h.
725:63 Introduction to Human Physiology 4 s.h.
77:303 Introductory Radiation Biology 4 s.h.
99:161 Biochemistry 4 or 5 s.h.
Total required courses 34-36 s.h.

Physical Therapy
Coordinator: Terry R. Jones

Two options available: completion of 20 semester hours in one science area and eight semester hours in each of two other areas; or completion of 16 semester hours in one science, 12 semester hours in another science, and 8 semester hours in two other science areas.
hours in a second science and eight semester hours in a third; required science courses total 36 semester hours for the B.A. degree and 40 semester hours for the B.S. degree.

### Required Courses

#### Chemistry
- 4:1 and 4:4 Principles of Chemistry I-II 6 s.h.
- 4:6 Elementary Chemistry Laboratory 2 s.h.

#### Zoology
- 37:5 Principles of Animal Biology 5 s.h.
- 37:101 Principles of Human Genetics 3 s.h.

#### Physics
- 29:1-2 College Physics 8 s.h.

### Elective Courses in Required Sciences

#### Chemistry
- 4:7-8 General Chemistry 6 s.h.
- 4:9 General Chemistry Laboratory 2-3 s.h.
- 4:52 Chemistry in Our Lives 3 s.h.
- 4:11 Elementary Quantitative Analysis 4 s.h.
- 4:121-122 Organic Chemistry I-II 6 s.h.

#### Zoology
- 37:102 Principles of Modern Embryology 4 s.h.
- 37:109-110 Fundamental Genetics 5-8 s.h.
- 37:103 Comparative Vertebrate Anatomy 4 s.h.
- 37:112 Microscopic Anatomy 4 s.h.
- 37:118 Parasitology 4 s.h.
- 60:109 Human Anatomy 4 s.h.
- 72:151 Intermediate Physiology 5 s.h.

### Pre-Dentistry

Coordinator: James Failler

#### Required Courses

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

#### Chemistry
- 4:1 and 4:4 Principles of Chemistry I-II 6 s.h.
- 4:6 Elementary Chemistry Laboratory 2 s.h.
- 4:121-122 Organic Chemistry I-II 6 s.h.
- 4:141 Intermediate Chemistry Laboratory I 2 s.h.

#### Physics
- 29:1-2 College Physics 8 s.h.

#### Biology
- 37:3 Principles of Animal Biology 5 s.h.

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

Total required courses 32 s.h.

### Pre-Medicine

Coordinator: James J. Rauker

#### Chemistry
- 4:1 and 4:4 Principles of Chemistry I-II 6 s.h.
- 4:6 Elementary Chemistry Laboratory 2 s.h.
- 4:121-122 Organic Chemistry I-II 6 s.h.
- 4:141 Intermediate Chemistry Laboratory I 2 s.h.

Qualified students may substitute 4:5 Principles of Chemistry for 4:1 and 4:4

#### Physics
- 29:1 and 29:2 College Physics 8 s.h.

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

Upon completion of Principles of Animal Biology, a student must also complete one advanced course in zoology from the list below to meet the minimum requirement for admission to The University of Iowa College of Medicine. (See admission requirements listed under "College of Medicine").

- 37:102 Principles of Modern Embryology 4 s.h.
- 37:103 Comparative Vertebrate Anatomy 4 s.h.
- 37:105 General Physiology 4 s.h.
- 37:107 Vertebrate Zoology 4 s.h.
- 37:109 Genetics 4 s.h.
- 37:110 Fundamental Genetics 4 s.h.
- 37:120 Protozoology 4 s.h.

In addition to meeting the minimum requirements for admission to medical school, students must add four semester hours of chemistry or three semester hours of zoology or four semester hours of physics to satisfy the requirements of the B.A. in general science (Total of 36 s.h.).

Students who earn a B.S. degree are required to earn an additional four semester hours of science credit, resulting in a total of 40 s.h. Mathematics (required for medical school admission, but not for a general science major)

For students with four years of high school mathematics:

- 22M:20 Elementary Functions 3 s.h.

(More advanced courses in mathematics should be substituted if prerequisites can be met.)

### Pre-Veterinary Science

Coordinator: James J. Rauker

#### Chemistry
- 4:1 and 4:4 Principles of Chemistry I-II 6 s.h.
- 4:6 Elementary Chemistry Laboratory 2 s.h.
- 4:121-122 Organic Chemistry I-II 6 s.h.
- 4:141 Intermediate Chemistry Laboratory I 2 s.h.

#### Physics
- 29:1-2 College Physics 8 s.h.

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

(For application to The University of Iowa College of Veterinary Medicine)

- 4:1 and 4:4 Principles of Chemistry I-II 6 s.h.
- 4:6 Elementary Chemistry Laboratory 2 s.h.
- 4:121-122 Organic Chemistry I-II 6 s.h.
- 4:141 Intermediate Chemistry Laboratory I 2 s.h.

#### Physics
- 29:1-2 College Physics 8 s.h.

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

(For application to The University of Iowa College of Veterinary Medicine)
Botany
2:1 Introduction to Botany 5 s.h.

Science Teaching
Coordinator: Robert H. Yager

Biology Emphasis
Botany and Zoology
2:3 Introduction to Botany 5 s.h.
37:3 Principles of Animal Biology 5 s.h.
Electives in botany and zoology (at least three semester hours in each department) 18 s.h.

Chemistry
41:1 and 4:4 Principles of Chemistry I-II 6 s.h.
42:1–122 Organic Chemistry I-II 6 s.h.

Others
12:3 Principles of Geology (Physical) 2 s.h.
or
12:4 Principles of Geology (Historical) 2 s.h.
29:1 College Physics 4 s.h.
97:128 Meaning of Science 2 s.h.
97:130 History of Science 2 s.h.

Total required courses 52 s.h.

Earth Science Emphasis
Geology
12:3, 11:23 Principles of Geology (Physical) 2 s.h.
or
12:4, 11:24 Principles of Geology (Historical) 2 s.h.
12:9 Geology of Iowa 2 s.h.
12:42 Mineralogy 3 s.h.
12:121 Principles of Paleontology 3 s.h.
12:161 Principles of Stratigraphy 3 s.h.
or
12:171 Geomorphology 4 s.h.

Chemistry
4:1 and 4:4 Principles of Chemistry I-II 6 s.h.
4:6 Elementary Chemistry Laboratory 2 s.h.
or
4:11 Quantitative Analysis 4 s.h.

Physics
29:1–2 College Physics 8 s.h.
29:61–62 General Astronomy 8 s.h.

Others
44:19 Geography of Natural Resources 4 s.h.
44:101 Introduction to Weather and Climate 3 s.h.
97:128 Meaning of Science 3 s.h.
97:130 History of Science 2 s.h.

Total required courses 54 s.h.

If 11:23 and 11:24 are elected, 58 semester hours will be required.

Chemistry Emphasis
Chemistry
4:1 and 4:4 Principles of Chemistry I-II 6 s.h.
or
4:6 Elementary Chemistry Laboratory 2 s.h.
or
4:8 General Chemistry II 3 s.h.
or
4:9 General Chemistry Laboratory 2 s.h.
or
4:11 Quantitative Analysis 4 s.h.
or
4:11–132 Physical Chemistry I-II 6 s.h.

Physics
29:1 College Physics 4 s.h.
or
29:17 Introductory Physics I 4 s.h.
or
29:2 College Physics 4 s.h.
or
29:18 Introductory Physics II 4 s.h.
or
29:19 Introductory Physics III 4 s.h.
or
29:27 Electrical Measurements 3 s.h.
or
29:129 Electricity and Magnetism 3 s.h.
or
29:8 Electives in Physics or Mathematics 6 s.h.

Mathematics
22M:3 Mathematical Techniques II 3 s.h.
or
22M:20 Elementary Functions 3 s.h.
or
22M:25–26 Calculus I-II 8 s.h.
or
4:1 and 4:4 Principles of Chemistry I-II 6 s.h.
or
4:6 Elementary Chemistry Laboratory 2 s.h.
or
4:11 Quantitative Analysis 4 s.h.

Others
97:128 Meaning of Science 2 s.h.
or
97:130 History of Science 2 s.h.

Total required courses 54 s.h.

Physics Emphasis
Physics and Astronomy
29:1 College Physics 4 s.h.
or
29:17 Introductory Physics I 4 s.h.
or
29:2 College Physics 4 s.h.
or
29:18 Introductory Physics II 4 s.h.
or
29:19 Introductory Physics III 4 s.h.
or
29:27 Electrical Measurements 3 s.h.
or
29:8 Electives in Physics or Mathematics 6 s.h.
or

Mathematics
22M:3 Mathematical Techniques II 3 s.h.
or
22M:20 Elementary Functions 3 s.h.
or
22M:25–26 Calculus I-II 8 s.h.
or
4:1 and 4:4 Principles of Chemistry I-II 6 s.h.
or
4:6 Elementary Chemistry Laboratory 2 s.h.
or
4:11 Quantitative Analysis 4 s.h.

Others
97:128 Meaning of Science 2 s.h.
or
97:130 History of Science 2 s.h.

Total required courses 54 s.h.
**Courses Primarily for Undergraduates**

<table>
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<tr>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Introduction to Botany</td>
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<tr>
<td>Principles of Astronomical Biology</td>
<td>5 h</td>
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<tr>
<td>Measuring of Science</td>
<td>2 h</td>
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<tr>
<td>History of Science</td>
<td>2 h</td>
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<tr>
<td>Electives in Botany and Zoology</td>
<td>8 h</td>
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<tr>
<td>Principles of Chemistry I-II</td>
<td>6 h</td>
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<tr>
<td>Elementary Chemistry Laboratory</td>
<td>2 h</td>
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<tr>
<td>Quantitative Analysis</td>
<td>4 h</td>
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<td>Organic Chemistry I</td>
<td>3 h</td>
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<tr>
<td>Physical Chemistry</td>
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<tr>
<td>Measuring of Science</td>
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<tr>
<td>History of Science</td>
<td>2 h</td>
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<tr>
<td>Introduction to Botany</td>
<td>5 h</td>
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<tr>
<td>Principles of Animal Biology</td>
<td>5 h</td>
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<tr>
<td>General Astronomy</td>
<td>4 h</td>
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<tr>
<td>Principles of Geology (Physical)</td>
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<td>Physical Geology Laboratory</td>
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<tr>
<td>Historical Geology Laboratory</td>
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<tr>
<td>General Astronomy</td>
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</tbody>
</table>

**Genetics**

**Program Chairman:** Dawson Mohler

Genetics is an interdisciplinary program of the departments of Biochemistry, Botany, Microbiology and Zoology. The M.S. and Ph.D. degrees are taken in one of the participating departments; degrees are not offered in genetics. Because genetics cuts across traditional divisions in biology, each student's program is built of appropriate courses in the several departments he or she elects. The dominant general education or major emphasis within genetics is determined by the student's needs. All students in the interdisciplinary program were prepared in botany and zoology. Aided by a Biological Sciences Development Award from the National Science Foundation, the University has recently increased its faculty in genetics. The program depends primarily on the needs of the students.
upon these several geneticists, especially for teaching, but it involves a number of other scientists whose research includes genetics.

The program is administered by an interdepartmental committee.

Staff: professor Bresner (Zoology), Frankel (Zoology), Millikan (Zoology), Mohler (Zoology), Wislocki (Psychology), Zellweger (Pediatrics), associate professor Chalkley (Biochemistry), Croway (Biochemistry), Sia (Microbiology); assistant professors Carlson (Biology), Fish (Microbiology), Coslin (Zoology), Hegmann (Zoology), Szyrzycki (Botany), Walker (Microbiology)

Courses

**Biochemistry**
- 95:131 Molecular Genethics
- Senn as Zoology 37:171

**Botany**
- 2102 Genetics
- Senn as Zoology 37:170
- 2103 Plant Cell Genetics
- Senn as Zoology 37:171

**Microbiology**
- 61:170 Topics in Microbial Genetics
- 61:170 Molecular Mechanisms in Heredity

**Zoology**
- 37:191 Principles of Human Genethics
- 37:190 Genetics
- Senn as Botany 2-302
- 37:119 Fundamental Genetics
- Senn as Botany 2-303
- 37:118 Evolution
- 37:180 Advanced Genetics
- 37:183 Population Genethics
- 37:183 Behavioral Genetics
- 37:183 Quantitative Genetics
- 37:171 Experimental Genetics
- Senn as Microbiology 19:11

**Geography**

Department Chairman Clyde F. Kahn

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

Vanished is the legendary encyclopedia geographer crammed with isolated bits of information ranging from the capital city of Mauritania to the annual Yukon valley salmon production or the height of the highest mountain in Outer Mongolia. Modern geography is concerned more with the spatial aspects of human behavior than with the memorization of rainfall data, crop production or the length of rivers. Students who elect courses in geography soon find that geographic insights and methods of inquiry are related to the solution of many of the complex problems confronting modern societies, such as air and water pollution, traffic jams, the development of ghettoes in large cities, rapidly increasing populations and conflicts between nations. An increasing number of under-graduates is discovering that a major in geography provides them with concepts and methods for organizing cities, market regions, school districts or other human institutions.

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

Modern technology has come to the aid of the profession in achieving some of its goals. Satellite instrumentation, such as radar, infra-red and visible light cameras, are being used to gather information for understanding and solving a wide range of human problems. The computer has proved to be a priceless aid in analyzing these data, which are influencing the planning of urban areas, the development of better policies and practices for the use of resources, the solution of pollution and other environment-man problems, the easing of internal and international conflicts, and many other endeavors. Today's geography is man-centered and contributes to the decision-making processes involved in determining how man can improve the quality of life in this complex age.

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

There is also a growing demand for young people concerned with man's perception of and his subsequent interactions with the natural environment. Courses in geography are commonly required of students preparing to enter the teaching profession at the elementary and secondary school levels, of students who want to work in urban and regional planning, and as a background for many related professions, including law, hospital administration and transportation engineering.

The Undergraduate Program

The Geography faculty has attempted to build an undergraduate program which contributes to the liberal education of all undergraduate students; it provides innovative and relevant preparation of undergraduate majors for careers in which an understanding of geography is basic and it joins in significant interdepartmental programs involving regional, urban and environmental components.

A number of geographic themes and principles comprise the intellectual framework of the discipline and serve as unifying threads through all courses constituting the Department's program. The stress is on the spatial aspects of human behavior, environment-man relations, the spatial organization of territory for achieving institutional goals and the geography of particular parts of the world, such as newly developed regions.
Students electing to major in geography will be exposed to concepts and methods of inquiry in physical, economic, social, and political geography; especially as they relate to urban areas. They will be taught how to state problems from a geographic point of view, where and how to find relevant data for analyzing these problems, how to relate their findings to existing theories, and how to apply their findings to real-world situations.

Geography courses open to undergraduate students may be taken in any order or simultaneously; no undergraduate course in geography has any prerequisites. Most courses below the 100 level are open to freshmen.

Undergraduate students may be admitted to the major program in geography after conferring with the Department chairman.

Students majoring in geography must meet the general College of Liberal Arts and Sciences requirements. Credits earned in five geography courses—44:1 Geography and Human Activity, 44:2 Natural Environment and Man, 44:11 Introduction to Social Geography, 44:19 Natural Environmental Issues, 44:30 Introduction to Economic Geography, and 44:35 Introduction to Urban Geography—may be applied toward the social science core requirement.

The Bachelor of Arts and Bachelor of Science degree programs both require 26 semester hours of coursework in geography, including the Undergraduate Seminar and at least 12 semester hours in 100-level courses.

It is recommended that all complete Geography and Human Activities, and Natural Environment and Man.

With the help of their advisers, students may plan study programs which best suit their individual needs.

For example, those considering careers in urban planning, or who expect to work in an urban environment, might well take a cluster of courses including Introduction to Urban Geography, 44:115 Political Behavior and Urban Spatial Structure, 44:135 Urban Spatial Structure of Urban Areas, 44:136 Geographic Analysis of Urban Areas, 44:137 City Growth and Development, and other courses related to the study of urban structure and function.

Students interested in problems relating to ecology might elect Natural Environment and Man, Introduction to Social Geography, Natural Environmental Issues, 44:101 Introduction to Weather and Climate, 44:116 Political Ecology, 44:120 Natural Hazards, and 44:122 Natural Habitats of the United States.

All undergraduate students majoring in geography must take a course in statistics, such as 22B:43 Introduction to Statistical Methods, or its equivalent, such as 44:108 Quantitative Methods or 34:11 Theory, Research and Statistics.

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

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

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

The Graduate Program

The halls of the Department at the graduate level are to prepare graduate students to carry on creative and productive research in geography involving the use of theory, modeling and formal verification methods; to prepare students at both the M.A. and Ph.D. levels for positions to which they aspire in research, teaching or some area of applied geography; and to help students develop their ability to apply knowledge of facts, theories and methodologies to specific societal problems. The achievement of these goals is demonstrated in large measure by the demand for Iowa graduates to fill positions on college and university faculties, in research-oriented institutions and in business and government.

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

To develop concepts, models and theories which facilitate the study of these basic aspects of geography, the Department offers a graduate program of courses and seminars at the intermediate and advanced levels and directs research efforts of qualified students. In addition, courses have been developed to provide graduate students with the technical skills necessary for geographic analysis of human activities and the environments in which they take place. Special attention is given to the utilization of theory and the construction of models in analyzing human behavior in urban areas and in selected regions.

In determining the advisement of a student to the graduate program, the Geography Department considers the total record of each student individually. In addition to the general rules and regulations set forth in the "Manual of Rules and Regulations of the Graduate College," the Department considers the student's undergraduate grade-point average, especially during his or her junior-senior years; his or her scores on the Graduate Record Examination Aptitude Test; letters of recommendation from those with whom he or she has taken courses; and an essay in which the applicant sets forth the reasons for wanting to continue his or her study of geography at The University of Iowa.

Students with undergraduate grade-point averages between 2.5 and 2.75 will be admitted to the M.A. degree on condition that they pass 44:360 Advanced Quantitative Methods on their first 12 hours of graduate work, as approved by the Department, in order to remain as graduate students. Foreign students and others from undergraduate institutions which evaluate students on a basis other than grade-point averages will be considered according to their relative academic standing in their respective institutions.

All M.A. students are required to complete a minimum of 36 semester hours of graduate work, including 44:108 Quantitative Methods I, 44:201 and 44:202 Geographical Analysis I and II.

A minimum of six semester hours of credit may be earned by the satisfactory completion of a thesis for those who wish to take the M.A. degree with thesis. The remainder of both M.A. programs may be composed of graduate level courses or research seminars, as approved by the faculty.

All M.A. students must pass a final examination.

Students whose objective is the Ph.D. degree are required to complete 44:108 Quantitative Methods, 44:201-282 Geographical Analysis I and II, and 208 Advanced Quantitative Methods, preferably during the first year in residence. However, the student may meet these course requirements with a satisfactory
performance in written examinations during the first week of the first semester for which he or she registers.

All doctoral students must also complete two research seminars preferably during their second year in residence, under the direction of different faculty members. They are also required, unless excused by the faculty, to register for 44:300 each semester while in residence. During the academic year, one semester hour of credit will be awarded each semester on an S/U basis for this course. The remainder of the Ph.D. program includes appropriate graduate courses, seminars and research in geography, depending on the interest of the student; courses in disciplines closely related to the student’s objectives and interests; and courses which satisfy the tool requirement.

Programs for students who wish to study for the Ph.D. in geography are established separately for each student. For this reason, as soon as possible after beginning graduate work, doctoral students are urged to declare a general area of specialization within the discipline and to secure a faculty adviser. During the second year in residence, if possible, the doctoral student should declare a specific field of specialization within his or her general area of interest.

Preferably during his or her second year in residence, and no later than the fifth semester, the doctoral student must, with the approval of his or her adviser, submit one of his or her own research papers to the faculty, who will pass upon the merits of the research demonstrated therein. Such a paper is commonly referred to as a Qualifying Paper.

Research tool requirements for the Ph.D. candidates are of two kinds. One is the course 44:208 Advanced Quantitative Methods; the other may be satisfied by completing any other appropriate course, as approved by the faculty. At the time the student declares his or her specific area of specialization.

To become a candidate for the Ph.D. degree, the student is required to pass a comprehensive examination consisting of written and oral parts, in which he or she demonstrates analytical proficiency with respect to his or her major area of specialization and a general knowledge of the discipline, including both content and methodology. Upon passing the comprehensive examination, the doctoral candidate will prepare a research design to be presented before the staff seminar. After the design is approved by the faculty, the candidate is expected to conduct the necessary research and analysis, and to present his or her findings in an approved dissertation, which must be defended in a final oral examination.

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

Innovations in Teaching

During the past year or two, faculty members have initiated some interesting changes in their teaching strategies, in order to improve their instruction and to develop greater student interest and participation.

Courses have been re-oriented, from an emphasis on a body of knowledge to be learned to the development of problem solving abilities. Attempts are being made to break with the well-established teaching procedures, such as the "lecture-read-test" syndrome.

In some instances, lectures are 40-50 longer the focus of a course.

Rather, lectures are built around the activities to be performed in the discussion-laboratory periods. So, too, are the reading assignments. In other instances, the lectures, laboratories, discussions, readings, papers and examinations are being used in such a way as to achieve new goals. There is also interest in the development of a series of computer-program units for use in several undergraduate courses. As a result of these innovations, several courses have been ranked above average in the Course-Instructor Evaluation program sponsored by the Student Association Senate during recent years, and enrollments in all courses have increased.

Research Productivity

Since its origin, the Iowa Department of Geography has made significant contributions to the advancement of research in geography and is continuing to do so. It was among the first in the country to adapt the scientific method to geographic research, to use quantitative methods in the analysis of the location and distribution of natural and cultural phenomena over the earth’s surface, and to develop mathematical models and geographic theory. In most instances, the research program of the Department produces an immediate feed-back to the instructional program. Thus, the content of both undergraduate and graduate courses reflects the latest advances in the discipline, both in content and methodology.

Rating of Department

In its recent evaluation of graduate departments, the American Council on Education ranked the Iowa Department of Geography as "strong." The Department was also included in the list of 15 "leading" departments of geography in the nation.

The Faculty

Individual faculty members participate in University, local, state, national and international groups whenever significant use can be made of their special problems and expertise. They give time and energy to professional organizations and have served as executive officers, as members of governing boards and as consultant editors for the Association of American Geographers, the National Council for Geographic Education, the Regional Science Association, the International Geographical Union and the National Council for the Social Studies.

Relations with Other Departments

In both their instructional and research efforts, members of the Department work closely with their colleagues in other departments within the College of Liberal Arts, as well as in other divisions of the University itself. At a special level, the Institute of Urban and Regional Research. The Department’s interest in problems relating to the environment and man, for example, has led to cooperation in the establishment of interdisciplinary courses and research projects with other departments in both the natural and social sciences, as well as in the schools of Engineering, Medicine and Law.
Liberal Arts

Students majoring in geology must meet the general requirements of the College of Liberal Arts in rhetoric and physical skills, mathematics, foreign language; and the literature, historical-cultural, social science and natural science core areas. It is recommended that they satisfy the language requirement with French, German or Russian; and the social science core requirement with approved courses in economics, geography and/or anthropology. Most students meet the Liberal Arts requirements in less than the 62 hours allowed.

Geology Courses

These are in addition to the College of Liberal Arts' general requirements:

11:23 Earth History and Resources 4 s.h.
11:24 Man and His Physical Environment 4
 two semesters of freshman geology 6-8
12:42 Mineralogy 3
12:52 Elementary Petrology and Geochemistry 3
12:112 Geological Field Methods 1
12:113 Summer Field Course 6
12:121 Principles of Paleontology 3
12:191 Structural Geology 4
12:198 Senior Seminar 1
 two elective geology courses 6

Supporting Sciences

The geology major requires at least 10 semester hours of college-level mathematics, including either one semester of calculus or 232:E35 Engineering Mathematics I (computer science or statistics courses may be counted toward the 10-hour requirement) and eight hours of physics, eight hours of chemistry and five hours of college-level zoology or botany.

Research

Many students in the junior or senior year are ready to pursue some aspect of original investigation for credit. Those who are

Graduate Programs

Students planning to take graduate work in geology should have completed geology and supporting courses equivalent to those required of undergraduate geology majors at Iowa. Deficiencies may be remedied at the beginning of graduate study.

Prospective graduate students in geology should consult the "Rules and Regulations" in the "Graduate College" section of the Catalog for general admission and graduate study requirements.

All graduate students in geology are required to perform teaching, research or other appropriate services for the Department, as part of the degree program.

The Master of Science Degree

The M.S. degree programs are designed to complete the student's broad, fundamental background in geology and supporting sciences. They prepare the student for a professional career in geology, or for more advanced and specialized studies—although it is certain situations and with faculty approval the student may pursue a specialized program at the master's level.

The Department chairman assigns each entering graduate student to a faculty adviser and designates two additional faculty members to form the student's advisory committee. The committee is responsible for approving a suitable program of coursework, guiding the student in the development of research plans and—before the end of the student's first year of residence—approving his or her thesis topic. If he or she is taking the degree

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

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

To qualify for the final master's examination, the candidate must have at least a 2.75 (4 = A) grade-point average on University of Iowa graduate courses offered toward a degree.

The Master of Science Degree with Thesis

Students are encouraged to select thesis topics involving a variety of geological subdisciplines and scientific skills. Mapping these are considered particularly appropriate if the area is widely chosen. Other topics may be equally acceptable.

The Master of Science Degree without Thesis

Relatively few students are encouraged to pursue this program, which requires that the applicant have approximately three months' experience working under supervision of a professional geologist, or equivalent experience in some phase of geologic activity.

If possible the student should receive prior faculty permission to apply the experience toward the degree.

The student must submit a written report on the activity and on the geologic principles 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 30 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 final scientific report dealing with an appropriate subject or project. Credit may be granted for this report.

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

This program enables students to combine certification to teach secondary school with participation in a specialized graduate curriculum. It is awarded by the College of Education. The M.A.T. degree requires at least 20 semester hours of graduate study in professional and at least 18 hours of graduate coursework in earth science.

The Doctor of Philosophy Degree

The Doctor of Philosophy degree in geology requires at least 72 semester hours of graduate coursework, including at least two full-time semesters in residence beyond the first 24 hours of graduate study.

Departmental language and tool requirements for the Ph.D. degree may be met either by achievement of competence in two languages or in one language and one tool, or achievement of proficiency in one language.

Competence is normally achieved by satisfactory completion of a one-year sequence of appropriate courses, proficiency by satisfactory completion of a two-year sequence.

French, German, and Russian are languages which meet Departmental requirements; statistics and computer science are suitable tool areas. In exceptional circumstances the faculty may approve other languages or tool areas.

Courses in such related disciplines as botany, chemistry, physics, and zoology are not regarded as satisfying tool requirements, although they may provide indispensable background for the various facets of geological specialization.

A course in a related discipline taken by a student who has not been satisfied by meeting the language and tool requirements must be of at least 15 semester hours and must be approved by the faculty. These courses may be applied to the credit requirements for the degree.

Within broad limits, the student's course selection should reflect his or her own needs, interests, and abilities. These are minimum requirements:

1. 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 a minor 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, is required toward the Ph.D. 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 possible for the doctoral candidate to choose, in consultation with the doctoral advisor, one additional field as the major and one additional field as the minor.

These are the major and minor fields:

- Economic Geology
  - Petroleum
  - Economic Minerals
  - Exploration Geophysics
- Petrology-Mineralogy
  - Igneous and Metamorphic Petrology
  - Experimental Petrology

Structural Geology
- Geotectonics
- Structural Analysis
- Remote Sensing
- Stratigraphy
  - Physical Stratigraphy
  - Biostratigraphy
- Depositional Environments
- Sedimentary Petrology
- Palynology
- Palaeoecology
- Paleobotany
- Palaeontology
- Biocorrelation
- Geomorphology
- General Geomorphology
- Glacial and Quaternary
- Remote Sensing

Environmental Geology
- Ground Water
- Remote Sensing
- Ecology
- Other Minor Subjects
  - Botany
  - Zoology
  - Chemistry
  - Physics
  - Geography
  - Hydraulics
  - Archaeology-Anthropology
  - Science Education
  - Others

Cooperative Activities

Students benefit greatly from the presence on campus of the Iowa Geological Survey and the State Archaeologist. The Department has joint professorships with the Survey and the Department of Botany. Students sometimes work during summers and the school year on projects for the Survey—surveying, keeping well records, drafting and doing special projects.

There is cooperation between the Geology, Geography, Archaeology, Chemistry and Biology departments in course selection, joint instruction and equipment.

Field Trips

Field trips are an integral part of several courses in geology. Weekend general-interest events are frequent. Iowa City is situated in the midst of the richly fossiliferous Paleozoic bedrock. Marine and terrestrial fossil assemblages, extensive reefs and unique gneissic sites are available within a few hours' drive. All four Palaeozoic glaciations are represented in Iowa and each offers distinctive landforms and fossil assemblages.
Spring recess provides time for longer trips which are available to all students. In recent years these have included the Grand Canyon, the Florida Keys, the southern Appalachians, the Big Bend Region of Texas and the Ozarks. Advanced courses for seniors in technology and English. Students in all areas will take part in a once-a-week seminar designed to help consolidate accumulated knowledge in all areas. The participating student chooses two staff members to work with and presents two papers to the class and faculty. Students can present research results, reviews of topics in psychology or analysis of current geologic events. Different faculty members prepare each week, and student discussion is lively.

Joint Programs
Joint programs can be arranged. Typical joint majors include chemistry, physics, zoology and anthropology.

Original Research
Many students in the junior or senior year are ready to pursue original research for credit. They may assist a faculty member or graduate student with a current research project or initiate a small-scale project involving a combination of field, laboratory, and library investigation. Independent study is encouraged. Undergraduate classes have produced term reports which subsequently have been published.

The Honors Program
A degree with "Honors" in geology is offered. Students in the Honors Program can elect a senior thesis.

Staff/Professors: Furlani, Hinter, Nott, Tuttle; associate professor Stithelman, Tarzwell, Tuttle, professor Emeritus Taxer, assistant professor Marsh, Smecl, Swett, assistant professor Baker, Carman, Drake, Schabel, professor associate Strimple

Library: Roger C. Rudstull
Librarian: Vera Bacon
Technician: Kenneth H. Kerr

Courses Primarily for Undergraduates

15:1 Lectures in Earth History and Resources 2 a.h.

15:2 Men and His Physical Environment 2 a.h.
We open to those who have had 15:1, 15:1 or 15:2 or both seniors and juniors who are taking physical environment and conduct those who have both 15:1 and 15:2.

15:3 Principles of Physical Geology 3 a.h.
Introductory course focusing on processes that have operated and currently are operating our physical environment. Emphasis on lithostratigraphy and the earth science from science to planetary scale. In the course to be made available to students interested in geology by the time of the final examination.

15:4 Principles of Historical Geology 2 a.h.
Continuation of 15:3, but may take an independent study course through the position of earth science through the earth science of the university of Denver. Open to all students who have not had a college course in historical geology.

Courses for Undergraduates and Graduates

15:15 Introduction to Geology 4 a.h.
Lifecycle and evolution of geologic processes in various parts of the earth. Topics include rocks and minerals, geologic, tectonic, and environmental processes. Study of major geologic processes and the nature of the relationship between the processes and their effects on organisms. Preparation for more advanced geology courses. Preparation for the study of geology by the time of the final examination.

15:16 Geology of the United States 2 a.h.
Survey of geology of the interior of the United States for students who have had previous course in geology. Includes field trips for the study of geologic processes and the nature of the relationship between the processes and their effects on organisms. Preparation for more advanced geology courses. Preparation for the study of geology by the time of the final examination.

15:17 Geologic Times for Geologic History 3 a.h.
Examination of the history of the earth and the geologic processes that have operated on the earth. Study of the major geologic events and the nature of the relationship between the processes and their effects on organisms. Preparation for more advanced geology courses. Preparation for the study of geology by the time of the final examination.

15:18 Geologic Field Trip 2 a.h.
Sevce students in dating geologic processes in areas of geologic interest. Preparation for the study of geologic processes and the nature of the relationship between the processes and their effects on organisms. Preparation for more advanced geology courses. Preparation for the study of geology by the time of the final examination.

15:19 Field Trip 2 a.h.
Sevce students in dating geologic processes in areas of geologic interest. Preparation for the study of geologic processes and the nature of the relationship between the processes and their effects on organisms. Preparation for more advanced geology courses. Preparation for the study of geology by the time of the final examination.

15:19 Tertiary Analysis 2 a.h.
Techniques of interpretation of tectonic and structural features. Preparation for the study of geologic processes and the nature of the relationship between the processes and their effects on organisms. Preparation for more advanced geology courses. Preparation for the study of geology by the time of the final examination.

15:20 Elementary Petrology and Geochemistry 3 a.h.
Lecture, laboratory, and discussion dealing with principles of geology. Geoscience, petrology, mineralogy, and geologic processes. Preparation for the study of geologic processes and the nature of the relationship between the processes and their effects on organisms. Preparation for more advanced geology courses. Preparation for the study of geology by the time of the final examination.

15:21 Geology of the United States 2 a.h.
Survey of geology of the interior of the United States for students who have had previous course in geology. Includes field trips for the study of geologic processes and the nature of the relationship between the processes and their effects on organisms. Preparation for more advanced geology courses. Preparation for the study of geology by the time of the final examination.

15:22 Physical Geology 2 a.h.
Preparation for the study of geologic processes and the nature of the relationship between the processes and their effects on organisms. Preparation for more advanced geology courses. Preparation for the study of geology by the time of the final examination.

15:23 Field Trip 2 a.h.
Sevce students in dating geologic processes in areas of geologic interest. Preparation for the study of geologic processes and the nature of the relationship between the processes and their effects on organisms. Preparation for more advanced geology courses. Preparation for the study of geology by the time of the final examination.

15:24 Geologic Remote Sensing 2 a.h.
Theory of remote sensing and techniques used in the interpretation of geologic processes. Preparation for the study of geologic processes and the nature of the relationship between the processes and their effects on organisms. Preparation for more advanced geology courses. Preparation for the study of geology by the time of the final examination.

15:25 Geologic Field Methods 1 a.h.
Field methods and basic instrumentation and methods of geologic mapping. Preparation for the study of geologic processes and the nature of the relationship between the processes and their effects on organisms. Preparation for more advanced geology courses. Preparation for the study of geology by the time of the final examination.

15:26 Summer Field Course 2 a.h.
Travels in the United States and Canada and study of geologic structures and processes. Preparation for the study of geologic processes and the nature of the relationship between the processes and their effects on organisms. Preparation for more advanced geology courses. Preparation for the study of geology by the time of the final examination.

15:27 Geology and Ground Water 2 a.h.
Geologic occurrence and geographic distribution of ground water. Preparation for the study of geologic processes and the nature of the relationship between the processes and their effects on organisms. Preparation for more advanced geology courses. Preparation for the study of geology by the time of the final examination.

15:28 Geologic Field School 2 a.h.
Travels in the United States and Canada and study of geologic structures and processes. Preparation for the study of geologic processes and the nature of the relationship between the processes and their effects on organisms. Preparation for more advanced geology courses. Preparation for the study of geology by the time of the final examination.

15:29 Directed Study 2 a.h.
Preparation for the study of geologic processes and the nature of the relationship between the processes and their effects on organisms. Preparation for more advanced geology courses. Preparation for the study of geology by the time of the final examination.

15:30 Principles of Palaeontology 3 a.h.
German Art (see "College of Liberal Arts"), a minimum of 24 semester hours of coursework in the Department beyond the 15-semester-hour basic program. The following course sequence or the equivalent is required of majors who have had no previous experience with the German language:

The Basic Program

First and Second Year
13:11 First-Semester German
13:12 Second-Semester German
13:21 Third-Semester German
13:22 Fourth-Semester German—Reading
13:23 Fourth-Semester German—Composition and Conversation
13:22 and 13:23 may be taken concurrently, if desired, or

Third Year
13:31 German Classics
13:32 German Classics
13:33 Intermediate Composition and Conversation
13:34 Intermediate Composition and Conversation

Fourth Year
13:101 Advanced Composition and Conversation
13:105 German Cultural History
13:111 Survey of German Literature
13:112 Survey of German Literature

An eight-week intensive course, 13:111, is offered each fall semester for students who seek the teaching certificate and are enrolled for the professional semester in the College of Education. Courses are to be taken in sequence after initial placement, unless permission to vary the sequence is approved by the faculty.

Students who intend to go on for an advanced degree are encouraged to add 13:103 German Phonology (three semester hours) to the above.

German majors, graduate as well as undergraduate, are urged to supplement their degree programs with either semester of 16:149-150 History of Germany but preferably both.

If a student who handles German with native proficiency wishes to major in German, he or she may do so, but since most of the undergraduate course requirements are waived in such a case, it will be necessary for him or her to declare German as a second major. The student is expected to earn a complete first major in a subject in which he or she has no such obvious advantage over his or her peers.

Teacher Certification

In view of the requirements of the College of Education for teacher certification, which are subject to change and which could conflict at times with the sequential requirements of the major in German, it is strongly advised that the student consult with the Departmental chairman or undergraduate advisor to help ensure the successful completion of his or her program.

Department Head: Edward Burzynski

Degrees offered: B.A., B.A. in Education, German

The primary function of the Department of German is to transmit to American liberal arts students knowledge of the language and literature, the civilization and culture traditionally designated as German. University graduates with a major in German frequently enter the teaching profession. (For teacher certification requirements, see "College of Education.") They may also find positions in government, foreign service and commercial enterprise, where their specialized knowledge of the language and literature, the history and culture of Germany is indispensable.

Graduate Requirements

Students majoring in German are normally required to complete, in addition to the general requirements of the College of
The Teaching Minor
In addition to the basic program of the first and second year, above, the following courses or their equivalents constitute a teaching minor in German:
13:31 German Classics
13:32 German Classics
13:33 Intermediate Composition and Conversation
13:34 Intermediate Composition and Conversation
13:100 Advanced Composition and Conversation

Honors in German
German majors of junior or senior standing with an overall grade-point average of at least 3.0 and a 3.5 grade-point average in German may enter this program. The student chooses an instructor in the field of his or her special interest, under whom he or she works. An extensive reading program, discussions, regular reports and a semester paper are required for each work unit (two semester hours). A total of six to eight semester hours may be taken in this program. Also, graduate courses and seminars are open to the student judged to be ready for them. A comprehensive examination in the senior year terminates the program.

Special Facilities
Students have the opportunity to improve their comprehension and command of the language by working with recorded materials in the Language Laboratory. An extensive collection of works and periodicals in the University Library facilitates research in all major areas of German literature and Germanic linguistics.

Graduate Study Requirements
Master of Arts Degree in German

M.A. with Thesis
Graduate students of German who demonstrate an interest in and potential for productive scholarship on the graduate level and who plan to continue to the doctorate should elect the program with thesis. A minimum of 30 semester hours or the equivalent of graduate-level work beyond that which normally constitutes an undergraduate major in German at the University of Iowa (see above) is required. If the candidate for the M.A. degree in German has not already had these undergraduate courses or their equivalents, he or she will include them in his or her program along with the other required courses as listed below in the required courses for the Master of Arts degree in German. The candidate will receive graduate credit for such makeup work, but this credit will not normally be counted toward the degree. Additional courses are elected with the approval of the graduate advisor. Of the minimum 30 semester hours required for the degree, at least 28 semester hours may be taken outside the Department with the approval of the graduate advisor. Such related electives as philosophy, history, linguistics, other languages, etc. are acceptable. Normally two semester hours of credit may be received for satisfactory completion of a thesis. The thesis may be either linguistic or literary and is subject to the approval of the faculty. Those students planning to go on to the Ph.D. degree are required to write a thesis unless departmental approval to do otherwise is granted.

Before the M.A. exams can be administered—usually after acceptance of the M.A. thesis—the candidate must show a competence level in a foreign language other than German equivalent to two years of college study or four years of high school study, with a grade of B or higher.

M.A. Without Thesis
A graduate student who desires his or her program to be completed in the direction of optimum preparation for secondary school teaching, government service, translation, etc., may elect the one without thesis. This program requires a minimum of 38 semester hours of coursework calculated to provide the student with training for the work he or she plans to do and is considered terminal. The same course requirements outlined for the M.A. with thesis apply to candidates for the M.A. without thesis; however, students in this program should, with the approval of the graduate advisor, choose those electives those courses which will best prepare them for their teaching careers, etc.

Required Courses: Master of Arts Degree in German
13:102 3 s.h.
13:103 3 s.h.
*13:105 3 s.h.
*13:111 3 s.h.
*13:112 3 s.h.
13:201 3 s.h.
13:202 3 s.h.
13:285 3 s.h.
13:241 3 s.h.
13:243 3 s.h. (any one)
13:245 3 s.h. (any one)

* The candidate will receive graduate credit for these courses, but this credit will not normally be counted toward the degree.
All M.A. and Ph.D. candidates must include 13:285 in their graduate work.

Doctor of Philosophy Degree in German
The Ph.D. degree is awarded upon the satisfactory completion of 15 graduate semester courses or their equivalents beyond the requirements for the M.A. degree and fulfillment of the requirements of the Graduate College. The Department of German and the Graduate College will normally include the coursework listed below, or their approved equivalents, and at least two advanced seminars in German language and German literature. The Ph.D. program will normally include the coursework listed below, or their approved equivalents, and at least two advanced seminars. The remainder of the program is planned by the candidate in consultation with the graduate advisor in such a way as to assure satisfactory balance and concentration. The student may earn up to 15 semester hours of credit for satisfactory completion of the Ph.D. dissertation. Some graduate courses outside the Department in related subjects may be counted toward the degree with the approval of the graduate advisor. Each candidate is required to demonstrate adequate teaching ability in German. Wherever possible the Department will afford the opportunity
and privilege to deserving graduate students to gain valuable teaching experience under supervision by making available such awards as teaching-research fellowships, teaching assistantships, tuition scholarships, etc.

A reading knowledge of French or Russian, and of a modern Scandinavian language or Dutch is required of all doctoral candi-
didates in Germanic linguistics; a candidate concentrating in literature must demonstrate a reading knowledge of French and
of another language which has been certified by his or her adviser
as pertinent to the research interests of the student. Competence in
these languages may be demonstrated by two years of college
study or four years of high school study, with a grade of "B" or
higher in each of the languages or though testing by the
Department. The requirements must be met before the compre-
henfive exams can be administered.

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

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

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Concentration in one period of German literature 9 s.h.

* The candidate will receive graduate credit for these courses, but this credit will not normally be counted toward the degree.

Staff: professors Drovetzsky, Fehling; professor emeritus Funke; associate professor Sandrock, ter Haar, Zage; associate professor Emeritus Lyke, assistant professors Domsch, Nagels, Parken, Runge, Wilkening

Courses

Normally, for purposes of quick placement, two units of high
school language instruction are considered equivalent to one unit
on the college level. For example, a student who has completed
two years of high school German language instruction is or-
dinarily expected to register for the second year of college Ger-
man (13:21), but if such a student is not sufficiently-prepared for
13:21, he or she can secure permission to register for 13:12, or
even 13:11. If the latter occurs, however, three semester hours
are added to his or her general graduation requirement. Prodi-
cency-placement exams are given to students in whose cases the
routine procedure above does not seem suitable.

Students electing to satisfy an eight-semester-hour minimum
foreign language requirement in German (I.e., B.S., B.F.A.
or B.M. degree candidates) may do so by completing the basic
course which consists of the following sequence: 13:11, 13:12 and
13:21, for a total of nine semester hours.

Students who elect to satisfy in German their 12-semester-
hour minimum foreign language requirement for the B.A. de-
gree, may do so by completing, in addition to the nine-semester-hour basic course sequence above, a fourth-semes-
ter course. For this fourth-semester course the student has an
option of taking either 13:22 or 13:23.
A student may not take or repeat, for either credit or quality
points, any course he or she has already completed a higher-
level course which assumed the earlier course, or its equivalent,
to be a prerequisite.

Primarily for Undergraduates

13:11 First-semester German 9 s.h.

First unit of three-semester course sequence; emphasis on reading and basic struc-
ture of German language.

13:12 Second-semester German 9 s.h.

Second unit of three-semester course sequence; study of basic structure of German
language continued; emphasis on vocabulary building and reading ability.

13:17 Germanic Heroic and Erotic Literature of the Middle Ages 6 s.h.

Masterpieces of this period, including Pritlew, the Nibelungenlied and Tristan read
in English translation; analyzes second semester core requirement in literature; also
designed for large seminar may be taken by other interested undergraduates;
see also 11:17

13:21 Third-semester German 9 s.h.

Third unit of three-semester course sequence; basic structure of German grammar
reviewed; emphasis on simple conversation, composition and essay reading.
Note: A student who has failed all of three of the units of the basic course sequence
or equivalences has an option of taking either 11:22 or 12:23 for his or her fourth
semester; courses 11:22 and 12:23 to be may duplicate each other, as they may
be taken concurrently or sooner for full credit.

13:29 Fourth-semester German: Reading 9 s.h.

Standard fourth-semester course for students satisfying foreign language require-
ment for B.A. degree; grammar review of German grammar; reading of short but
representative literary works.

13:39 Fourth-semester German: Elementary Composition and Conversa-
tion 9 s.h.

Fourth-semester course which also satisfies foreign language requirement for B.A.
degree, recommended for students who wish to further train in active use of the
language, emphasizing written communication, delivering speeches, carrying on
conversations in German.

13:51 German Classics 9 s.h.

Representative works of Lessing, Goethe and Schiller studied in their relation to
Classical and medieval German Literature: prerequisites: 13:22 or equivalent;
see also 10:17

13:82 German Classics 9 s.h.

Continuation of 13:51; representative works of sixteenth- and seventeenth-century
authors; prerequisites: 13:22 or equivalent; see also 10:22

13:83 Intermediate Composition and Conversation 9 s.h.

Practice in translation of selected English texts, preparation of German texts;
emphasizing style and diction, as well as oral comprehension and oral expression; prerequisites: 13:22 or equivalent
To enroll under Plan B, the major program for teachers, the student must secure approval from his or her advisor. The honors major (Plan C) is open to students who meet the standards of the Honors Program and have been admitted by its director. The major requirements contain few limitations, except those designed to bring honors majors together in small classes and to encourage individual study in consultation with an advisor. The thesis requirement makes it especially important for the student to find a congenial advisor. The honors major is most useful to those who have interests they wish to pursue on their own, but it has also proved highly effective in preparation for law school and graduate work in history.

The requirements for the bachelor's degree with a major in history are as follows:

General Major in History (Plan A)
- Satisfaction of Historical-Cultural Core requirement; prospective history majors are advised, but not required, to complete this requirement by taking 11.29-30 Problems in Human History or 11.31-32 Western Civilization
- A minimum of 24 semester hours in courses offered by the Department of History; no more than 12 semester hours of American history will count toward fulfilling this requirement
- A minimum of 16 to 18 semester hours in related courses outside the Department of History: anthropology, economics, fine arts (excluding studio courses), geography, literature (excluding workshop courses), philosophy, political science, psychology, religion, and sociology, alternatively, the completion of a second major (besides history) in one of the above areas will satisfy this requirement; core courses or courses taken to satisfy core requirements will not be counted toward the fulfillment of the related area requirement

Prospective Teachers in History (Plan B)
- Core courses; any two chosen from 11.29-30 Problems in Human History and 11.31-2 History of Western Civilization (or equivalents, for transfer students)
- At least 18 semester hours of work in courses offered by the History department, of which 12 semester hours are in the ancient world and medieval Europe, and American history
- At least 24 semester hours of work in basic courses in three of these areas of the social sciences: anthropology, economics, geography, political science and sociology; courses taken to fulfill the core requirements will not be counted toward this requirement

Required courses in teaching methods and practice teaching

History Honors Major (Plan C)

This program leads to the Bachelor of Arts degree with Honors. The Department will admit to this program students with a grade-point average of 3.0 or above. Applications should normally be made at the beginning of the junior year. Requirements are:

Greek
See "Classics"

History
Department Chairman: Sydney J. James
Degrees offered: B.A., M.A., Ph.D.

In addition to providing information and methods which are essential and integrating part of any liberal education, the Department trains professional historians and teachers of history at various levels. It also serves those who require a knowledge of a period or aspect of history as background for their own specialized interests in other fields, and participates in several interdisciplinary programs such as American Civilization and East Asian Studies, which offer work toward undergraduate and graduate degrees.

Undergraduate Majors

The three forms of the undergraduate major in history have different purposes. The general major (Plan A) is for those who like the subject and have no special goals which might make the other forms more suitable. Though Plan A majors may take nothing but lecture courses, they are encouraged to include some small discussion classes and individual study projects. The amount of work in American history which may count toward the major requirements is limited to ensure that the student primarily interested in American history will gain perspective by becoming acquainted with another cultural tradition. The requirement of work in related areas is intended to ensure another sort of breadth in the student's experience. History majors without further preparation go into a variety of positions in business, public service, law, journalism. Many, however, plan further training in history, law, religion, library science or social work as preparation for careers where advanced work is necessary.
A minimum of 24 semester hours of work in history, with at least nine hours in the Department's honors offerings, which may include as many as six hours of honors thesis credit.

Course outside the Department as for the general major (Plan A).

Successful completion and oral defense of an honors thesis.

### Graduate Study

The graduate degree programs prepare students to teach in high schools or colleges. Those who pursue these degrees, however, often go into such occupations as archival work, library work, historical site preservation and display, publishing and various kinds of commercial research. Some enter the program leading to degrees in both law and history. The Departmental office keeps track of special training programs in museum or archival skills which graduate students can use as supplementary training.

The standard subjects—history of the United States and Western Europe—are offered in many subvtilisations differing in time periods, topics and the research interests of the faculty. In Far Eastern, Slavic European, ancient and Latin American subjects there are fewer courses, and prospective students should make certain their topics can be realized here. The simplest way to do this is to look over the research and teaching interests of the faculty as indicated in the Guide to Graduate Study sent to all applicants for admission. Several members of the staff are interested in quantitative methods of research; an even larger number work in intellectual history and the relation of thought to society.

### Graduate Admission

All applicants for admission, whether for the M.A. or Ph.D. program, must meet the general requirements for admission set by the Graduate College. In addition, they must pass the Graduate Record Examination Aptitude Test, have an official report of their performance in that examination forwarded to the Graduate Admission Office and submit a specimen of their writing—such as a term paper, seminar paper or M.A. thesis—to the History Department. All applications for graduate awards and/or admission are due February 15 for the fall semester or November 10 for the spring semester. The candidate is advised to take the Graduate Record Examination at an early date since an admission decision cannot be made between scores are received.

### Graduate Degree Requirements

**Master's Degree**

No special courses are required for admission to candidacy for this degree. As soon as possible in the first semester of his or her residence, the candidate should select a field of special interest and consult with a faculty member in that field, who will act as his or her supervisor. A plan of study approved by the supervisor and the Departmental executive must be filed with the Graduate College during the semester in which the degree is to be granted and before the final examination.

**Ph.D. Degree**

This program is for students professionally interested in historical research who mean to continue to do further work in history leading to a doctorate's degree. It requires a minimum of 30 semester hours of credit, including the completion of a research essay.

The candidate must elect at least 24 semester hours of work in history.

The candidate must earn select one division in history in which the subject of his or her essay will fall. He or she must earn at least 12 semester hours credit in this major field, including at least one seminar.

The candidate must earn at least six semester hours credit in a second division, including either a seminar or a readings course.

The essay in the major division is based on original research and prepared under the direction of the supervisor. It may not exceed 15,000 words unless the supervisor judges that a longer treatment is necessary; it may be as short as the supervisor thinks sufficient. Work on the essay will normally begin in the seminar in the major division and be continued with 16:296 Individual Study, in which rewriting will be completed under the close editorial scrutiny of the supervisor. In exceptional cases where the essay completed in seminar is judged to be of outstanding quality, other courses may be substituted for Individual Study.

**Plan B**—This plan, for those desiring only a master's degree, requires a minimum of 30 semester hours credit. Students who complete the M.A. under this plan may not become candidates for the doctorate in history. The work must be planned as early as possible in the first semester by the candidate in consultation with his or her adviser.

The candidate must earn at least 24 semester hours of credit in history.

The work in history must include at least 12 semester hours in one division of history. These hours must include at least one readings or seminar course.

The candidate's program must also include at least six semester hours each in two other divisions in history, or six hours in one other division in history and six hours in a related department. These hours must include at least one seminar or seminar course in history.

After completing these requirements, or in the seminar in which he or she expects to complete them, the candidate must present himself or herself to the Department for an oral and written comprehensive examination in his or her major division by three members of the Department. In the event of an unsatisfactory performance, the examiners may allow one resanitization.

**Doctor of Philosophy**

Students who earn the M.A. under Plan A at Iowa are admitted to the Ph.D. program upon the favorable recommendation of the examining committee. Students who earn the M.A. at another university must meet the general requirements for admission to the Graduate College and must submit a specimen of their writing, such as a seminar paper or an M.A. thesis, to the History Department.

The candidate must earn at least 72 semester hours of credit,
including credit for work done toward the master's degree. The 72 semester hours must include at least 18 semester hours in 200-level courses or above, except from these credits. At least 12 of the 18 hours must be completed before taking the comprehensive examinations, and at least 12 of these 18 hours must be completed at The University of Iowa. The candidate must also earn two semester hours of credit in the philosophy of history, historiography or methods of historical research, in courses specifically approved by the Department to satisfy this requirement (currently 16:298-299 and 26:112). Otherwise the candi-
date, in consultation with their supervisor, is free to distribute work in whichever way will best prepare him or her for the comprehensive examination and for writing the dissertation.

As soon as possible in the first semester of his or her residence as a Ph.D. candidate, the student should consult with the faculty member who seems most likely to become the dissertation super-
visor. The Department has no common language requirement for the Ph.D., but once the supervisor may and in many cases will require the candidate to demonstrate a reading knowledge of one or more foreign languages and proficiency in the use of other tools of study, the student and the supervisor should agree very early what these requirements will be. The candidate may not complete his or her comprehensive examination until these requirements have been satisfied.

In consultation with his or her supervisor, the student should invite one or more other faculty members to join with the super-
visor to constitute a committee of direction. The committee is to consist of the faculty members who are prepared to examine the candidate in each of the several fields of study which he or she will present in the comprehensive examination. When it is formed, the committee's first task will be to set the terms and conditions of the comprehensive. The common conditions re-
quired by the Department are that the candidate must be exam-
ined in writing in four distinct fields, at least three of them in history, the fields in history must be chosen from at least two different divisions (below), and a single oral examination must be held, covering all four of the fields presented.

The World

Medieval Europe

Europe, 1000 to 1815

Europe, 1815 to present

Russia and the Soviet Union

United States History

Latin American History

British Empire and Commonwealth

Chinese History

Japanese History

The committee may define and limit the individual fields for which they are prepared to examine the candidate, especially for each field, the form of the written examination, which may take the form of a syllabus, a critical bibliography, a topical paper, or a form or combination of these or other forms which the commit-
tee deems suitable. The oral examination will focus on issues and problems arising from the examination papers. Once he or she has undertaken the examination, the candidate must complete it; if he or she does not do so he or she will be considered to have failed.

The Ph.D. program is designed to be completed in four or five years from the commencement of graduate study. In any event, students must complete all degree requirements within five years from the end of the semester in which the comprehensive exami-
nation was passed, or failing this, must repeat the comprehensive examination.

Special Facilities

The University Library provides materials for graduate work in all fields of history offered by the Department, though often these must be supplemented by interlibrary loans or by the use of other libraries. The library is strong in all aspects of U.S. history. It houses the Henry A. Wallace papers and related collections, as well as other unique materials. In European history the special strengths are in French and English materials. The Iowa State Historical Society in Iowa City and the Herbert Hoover Presi-
dential Library in West Branch 10 miles away possess additional research materials of great value.

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

Staff, professors: Aydlett, Gelfand, Giese, Goldstein, Hale, Hawley, Horwitz, James, Laffore, Mead, Pelant, Persons, Rohrbaugh, Schonhein, Spitzer, Sutherland, professor emeri-
tus: Livingstone; associate professors: Dystran, Hennessey, Kerber, Larmour; assistant professor Large; instructors James, Monroe

Courses Primarily for Undergraduates

16:11 Survey of American History, 1492-1877 3 or 4 s.h.

Political, economic and social factors in growth of United States from Age of Discovery through Civil War and Reconstruction; apt. open to freshmen.

16:82 Survey of American History, 1877-Present 3 or 4 s.h.

Political, economic and social history of United States from 1877-present

16:72 Religion in American History, 1872-1900 3 s.h.

Development of religious thought patterns and institutional life in United States in context of growth of American culture; same as Religion 32:72

16:73 Religion in American History 1900-Present 2 s.h.

Development of religious thought patterns and institutional life in United States; continuation of 16:72; may be taken independently

16:82 Medieval European Society: Special Topics 2 or 3 s.h.

Discussive course for undergraduates devoted to single topic, such as decline of medieval civilization, popular life styles and expressions during the age of chivalry and social praise; prerequisite: consent of instructor

16:69 Introduction to Latin American History 3 s.h.

Emphasis on elements of continuity in society and institutions from colonial times to present. Specific topics, ranging from analysis of the impact of U.S. presence on Latin American political institutions to the role of Latin American societies in world economic and political systems. Prerequisite: consent of instructor

16:81 Individual Study Undergraduate cr. arr.

16:82 Individual Study Undergraduate cr. arr.

16:83 Honors Tutorial cr. arr.

16:84 Honors Tutorial cr. arr.

16:85 Honors Seminar: Problems in European History cr. arr

16:86 Honors Seminar: Problems in American History cr. arr.

16:87 Honors Tutorial cr. arr.

16:89 Historical Background of Contemporary Issues cr. arr.

Courses for Undergraduates and Graduates

Ancient and Medieval History

16:100 Historical Background of Contemporary Institutions cr. arr

16:101 Survey of the Western World in the Social, political, and intellectual history of ancient civilization from the Near East to Mesopotamia in eve of conquests of Alexander the Great; apt. open to freshmen

16:103 Survey of the Hebrew World and Rome 3 s.h.

Social, economic, political and intellectual history of Greek-Roman world from fourth century B.C. to reign of Justinian
History

16:17 Studies in the History of Women: The United States 3 s.
Introduction to women's studies, followed by survey of American social history as it has reflected changing roles of women and their families; emphasis on social change as it has affected the lives of women through time; selection from a variety of sources, analysis of documents, and extensive mapping of American fiction and film.

Latin American History

16:18 Latin America in the Atlantic World, 1750-1990 2 or 3 s.
Enlightenment, institutional modernization under Bourbons, revolutions for independence and church reform in Latin America, studied comparatively within a broader context encompassing Western Europe and North America; prerequisites for undergraduates, 14:49

16:19 Modern Mexico 2 or 3 s.
Modern Mexican Revolution 1810-1940 and its relationship to the nineteenth century; patents prerequisite for undergraduates, 14:49

Far Eastern History

16:20 History of East Asia to 1600 2 s.
East Asia from interaction with early civilizations of the Orient to the Song-Dynasty in China, to the Tang and comparable empires in Korea, Japan, and Vietnam; emphasis on cultural and social changes; prerequisites junior or senior standing.

16:21 History of Modern China 2 s.
Political and social development of China, Ch'in-1911, emphasis on "Great Leap Forward" and Cultural Revolution; prerequisites junior or senior standing.

16:22 History of China to 1942 2 s.
Origins and development of Chinese civilization through the early Ch'in period; emphasis on political, economic and social trends; prerequisites junior or senior standing.

Courses Primary for Graduates

16:23 Seminar: Latin Medieval Continental Europe 2 cr. or.
16:24 Seminar: Medieval Society and Institutions 2 cr. or.
16:25 Readings in Medieval History 2 cr. or.
16:26 Readings in Early Modern History 2 cr. or.
16:27 Seminar: Early Modern Europe 2 cr. or.
16:29 Readings: Comparative Treaties in European History, 1500-1775 2 cr. or.
16:30 Seminar: Revolutionary Europe 2 cr. or.
16:31 Seminar: Modern Europe 2 cr. or.
16:32 Seminar: Modern Europe 2 cr. or.
16:33 Seminar: Modern Europe 2 cr. or.
16:34 Seminar: Modern Europe 2 cr. or.
16:35 Seminar: Modern Europe 2 cr. or.
16:36 Seminar: Modern Europe 2 cr. or.
16:37 Seminar: Modern Europe 2 cr. or.
16:38 Readings: Modern Europe 2 cr. or.
16:39 Seminar: Modern Europe 2 cr. or.
16:40 Seminar: Modern Europe 2 cr. or.
16:41 Seminar: Modern Europe 2 cr. or.
16:42 Seminar: Modern Europe 2 cr. or.
16:43 Seminar: Modern Europe 2 cr. or.
16:44 Seminar: Modern Europe 2 cr. or.
16:45 Seminar: Modern Europe 2 cr. or.
16:46 Seminar: Modern Europe 2 cr. or.
16:47 Seminar: Modern Europe 2 cr. or.
16:48 Readings: Modern Europe and English Literature 2 cr. or.
16:49 Readings in Comparative Intellectual History 2 cr. or.
16:50 Readings in Comparative Intellectual History 2 cr. or.
16:51 Readings in Comparative Intellectual History 2 cr. or.
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16:97 Readings in Comparative Intellectual History 2 cr. or.
16:98 Readings in Comparative Intellectual History 2 cr. or.
16:99 Readings in Comparative Intellectual History 2 cr. or.
20:00 Readings in Comparative Intellectual History 2 cr. or.
Home Economics

Chairmen: Margaret O. Odum

The Department offers courses which contribute to the liberal education of University students, as well as those included in the major. Concentration in one of the areas of home economics makes it possible for undergraduate majors to develop some depth of specialization. The home economics core provides opportunities for professional orientation and some understanding of relationships among the various areas of specialization within home economics.

Home economics as a career offers a wide range of opportunities: teaching, dietetics, merchandising, interior and textile design, product development and quality control in textile and food industries, consumer relations, family life education and services, food service management, and service with community or government agencies.

Undergraduate Requirements

In meeting the general requirements of the College of Liberal Arts, students majoring in home economics should choose courses in other departments which are prerequisites for home economics courses. In addition to Liberal Arts core requirements, students are expected to complete the home economics core, made up of 17 hours Marriage and Family Interaction and one course from each subject area within the Department, and to satisfy requirements in one area of specialization.

The Bachelor of Arts

Each student must select one of the following programs, on the basis of interest and professional goals.

Family Development

These courses are required: 17:10 Growth and Development of the Young Child; 17:11 Clothing Economics; 17:12 Family Economics; 17:13 Textile Design II; 17:14 Interior Decoration II; 17:15 Directed Studies in Related Arts; 17:16 Advanced Nutrition; 3:11 Elementary Psychology; 3:4:1 Introduction to Sociology; a course in family sociology; and a course in economics.

Students seeking certification to teach home economics must also complete the requirements of the College of Education.

In the other areas of home economics the requirements are:
17:11 Introduction to Food Study, or 17:131 Food Study and 17:132 Food Study Laboratory; 17:41 Principles of Nutrition, or 17:142 Nutrition; and 17:20 Design for the Home, 17:70 Clothing, 17:81 Textiles, 17:133 Meal Management and 17:165 Family Housing.

The student should select additional courses in home economics and education in consultation with the faculty adviser. Experience can be arranged for students interested in working with handicapped children and other special groups.

Food and Nutrition

This program comprises 17:33, 17:132; 17:134 Experimental Food I and 17:142; plus courses relating to an emphasis on food, nutrition or dietetics.

Related Art and Housing

Required courses are 17:50, 17:54 Interior Decoration I; 17:80 Introduction to Textiles, or 17:81; 17:112; 17:155 Survey of Traditional Interiors; 17:160 Textile Design I; Printing and Dyeing; 17:165, 18:1 or 18:2 Elements of Art, and 18:20 Basic Design; and 66:1 or 66:2 Principles of Economics.

Electives in home economics, studio art, art history, marketing, communications, advertising, sociology, anthropology, psychology, urban and regional planning are recommended, depending on the student's professional goals.

Textiles and Clothing

Required courses are 17:70, 17:72 Clothing Design and Selection; 17:81; 17:171 Costume Design; 17:73; 17:182 Advanced Textiles; 17:183 Textile Economics; and 17:46.

Depending on the student's professional goals, courses in busi-
ness, administration, computer science, journalism, and radio
and television are recommended.

The Bachelor of Science

Food and Nutrition
Programs leading to this degree are recommended for students
contemplating graduate study and for students interested in re-
search positions in colleges and universities or in industrial,
government or medical laboratories.

In addition to home economics coursework required for the B.A.,
students in the B.S. program take 17:135 Physical Growth
and Nutrition and other courses appropriate to their professional
interests; a second year of foreign language; 23M:25 Calculus
I; 4121 Organic Chemistry I; 99:120 Chemistry of Biological
Materials; 99:130 Metabolism; 99:140 Experimental Bio-
chemistry; 61:157 General Microbiology; 29:1 and 29:2 College
Physics; and 72:13 Introduction to Human Physiology.

Textile Science
This program prepares students for graduate studies in textiles
or for positions in the textile industry. It comprises the general
College of Liberal Arts requirements for the B.S. degree; the
same home economics course requirements as for the B.A. de-
gree; and courses in chemistry, physics, mathematics and textile
science. Supplementary coursework may be taken in engineer-
ing, computer science, statistics and microbiology.

Programs for Teaching Majors
Three options are available to students who want to teach home
economics in secondary schools.

Undergraduates would complete the secondary teacher educa-
tion sequence, which includes requirements of the College of
Education and those specified for certification in the family de-
velopment section for the B.A. degree.

Students with the B.A. or B.S. degree may enroll in the certifi-
cation only program in order to meet certification requirements.
Courses for this program are selected according to the student’s
professional goals and in consultation with the faculty advisor.

Students with an undergraduate degree in a non-teaching home
economics major may complete the Master of Arts in Teaching
program. Requirements for this degree are described in the sec-
ton on graduate programs in home economics.

The Honors Program

Honors work in home economics consists of 17:191 Seminar and
17:192 Problems, in which students do creative work or a re-
search project. To be eligible for Honors, a student must have
junior standing; 30 semester hours in residence at the University;
an overall cumulative grade-point average of 3.0 or above; a
grade-point average of 3.2 in all home economics courses; and,
at least 12 semester hours in home economics. A written report
or Honors Thesis and an examination are required. Under the
advice of the chairman of the Department and another member
of the faculty serve as a committee for evaluation of the student’s
work.

The Graduate Program

In addition to the general requirements of the Graduate College,
degree candidates must complete specific requirements of the
Department, which include written and oral comprehensive ex-
aminations.

Master of Arts and Master of Science

For either of these two degrees, students must complete at least
30 semester hours of graduate work with a thesis, or 36 semester
hours of graduate work without a thesis, in addition to adequate
prerequisites for the degree. The designation of the degree de-
pends on the area of major work.

The thesis plan is recommended for students interested in
preparing for teaching and research in colleges and universities,
for positions in industry and for continued study beyond the
master’s degree. The thesis may be undertaken in the Depart-
ment of Home Economics or in cooperation with related depart-
ments or colleges.

Master of Arts in Teaching

This program is designed for students who have an undergradu-
ate degree in home economics. The program includes 18 hours
in home economics and the professional sequence required by
the College of Education. Comprehensive examinations are
given at the completion of the program.

Staff: professors Whitehead, Hoffman, Osman; professor emeritus
Woodruff; associate professors Keys, Osborn; associate professor
emeritus Smith; associate professors Mohamed, Parsons,
Skjolde, Stevens, Wolfson, lecturers Jenkins, Schell, instructors
Bader, Barringer, Cannon, Dorfman, Fowles, Hatt, Savage,
Williams

Courses Primarily for Undergraduates

17:19 Growth and Development of the Young Child 3 s.h.

Growth and development of young children; emphasis on factors underlying growth and
change. 17:21 Introductory Food Study 3 s.h.

Basic principles in preparation of food products 17:41 Principles of Nutrition 3 s.h.

Relation of nutrition to health; food preferences; functions of nutrients in the body;
applications for good nutrition. 17:80 Design for the Home 3 s.h.

Aesthetics and design principles in selection and arrangement of residential interiors
and furnishings; lecture and studio problems. 17:86 Interior Decoration I 3 s.h.

Planning of dwellings and their furnishings considering social, psychological, cultural,
esthetic, technical and economic factors. 17:87 Interior Decoration II 3 s.h.

Intermediate Decorative Painting 17:70 Clothing 3 s.h.

Clothing construction methods, pattern alteration, fitting problems. 17:71 Intermediate Clothing 3 s.h.

Construction of clothing using a variety of fabrics, designs and techniques, selection
of fabric as a social form; principles 17:79 or consent of instructor 17:73 Clothing Design and Selection 3 s.h.

Principles of design applied to current fashions in a modern environment; process of
designing clothing for men and women. 17:81 Textile Fibers: production and properties; fabric
construction and finishing. 17:81a Textiles 3 s.h.

Chemical structure, physical and chemical properties of natural and man-made
fibers; use structure and fabric construction, textile dying and finishing: laboratory:
microscopic and chemical analysis of fibers; preres: Chemistry 4:1
Hospital and Health Administration

Program Director: Gerhard Hartman
Degrees offered: M.A., Ph.D.

As hospital and health administration embraces many fields of academic preparation, the program has primary identification with the College of Medicine and the Graduate College but utilizes the facilities and resources of the entire University. Many significant phases of hospital and health administration present problems profoundly different from those usually con-
ofered in business, education or government. Certain vital as-
pects of hospital and health administration: (a) policy, procedural, technical and public relations problems which are
unique; it is precisely for this reason that this program was
originally instituted.

Programs of Study

Master of Arts

The Master of Arts program requires a minimum of 60 on-
campus semester hours of academic work during four semesters and completion of a thesis during the second year of study. After receiving the degree, and when deemed professionally advanta-
geous, the student is offered the opportunity to undertake a postgraduate assistantship in a carefully selected hospital or health institution under the direction of a qualified administrator.

While the curriculum stresses the conceptual unity and ge-
netic nature of the administrative decision-making process, courses are designed to acquaint the student with the institu-
tional environment of contemporary hospitals and health or-
ganizations. Administrative problems unique to health admin-
istration are stressed. Techniques of motivating goal-oriented behavior are considered, and organizational theory is examined as it pertains to the provision of hospital and medical care. The first-year curriculum is designed to help the student de-
velop a frame of reference which will enable him or her to relate past experiences and undergraduate education to the specialized program of graduate study in the hospital and health-care set-
ing. The case-study and role-playing approaches are used in the seminar setting, and subject matter is drawn from all administra-
tive specialties. Problems are posed in terms of situations which 
typify health-care institutions.

In order to help the student place contemporary health-care institutions in a meaningful perspective, emphasis is placed upon the history and evolution of formal health organization, and upon trends and developments on the international health scene. During each semester the student is expected to complete major written projects as well as to defend his or her arguments orally.

During the second academic year, greater emphasis is given to individual study. Plans of study are developed to broaden and deepen the student's understanding of the planning of health services and medical care administration while increasing under-
standing of essential social science research technologies.

The program of study culminates with preparation of the master's thesis. Research for and writing of the thesis is under-
taken during the third and fourth semesters.

Since the curriculum in hospital and health administration is based on the concept of the generic nature of administration, the plans of study emphasize an interdisciplinary approach. In addi-
tion to the study in hospital and health administration, students' programs include courses from the departments of Sociology, Political Science, Philosophy and Psychology, the School of Journalism, the College of Business Administration, Edu-
cation and Engineering. Additionally, master's candidates are expected to meet a three-semester-hour requirement in statistics.

Upon satisfactory completion of the two-year on-campus aca-
demic sequence and graduation, each student will be placed with a hospital or health organization as a postgraduate assistant in the capacity of an executive or administrative trainee.
Doctor of Philosophy
The academic program at the doctoral level is highly individualized. Students admitted to this program will normally be motivated by a desire to learn the advanced aspects of hospital and health administration with the intention of teaching and engaging in research.

Students may pursue doctoral study directly after completion of the bachelor's degree or the master's degree, whichever, in hospital administration or another appropriate field. Students have been accepted with and without previous hospital operational experiences. Those students who expect to continue their training through the doctoral degree may file a joint program for the master's and doctor's degree.

Staff: Professor Hartman, assistant professors Amidon, Brown*, Tocher, instructors Alpert, Dobbs, Johnsen

* on leave

### Courses

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>80.101</td>
<td>Fundamentals of the Modern Hospital</td>
<td>4 cr.</td>
<td>Organization in theoretical aspects and operations of all types of modern hospitals and health organizations, theory and history.</td>
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<tr>
<td>80.102</td>
<td>Fundamentals of Modern Hospital and Health Administration</td>
<td>4 cr.</td>
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<tr>
<td>80.103</td>
<td>Principles of Hospital and Health Administration</td>
<td>2 cr.</td>
<td>Emphasis on development of understanding of human relations and skills required for effective administration of hospitals and health organizations, leadership, and facility operation.</td>
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<tr>
<td>80.104</td>
<td>The Hospital in Modern Society</td>
<td>3 cr.</td>
<td>Develops conceptual skills required by hospital administrators.</td>
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<tr>
<td>80.105</td>
<td>Administrative Aspects of Medicine</td>
<td>3 cr.</td>
<td>Lectures and discussions to assist students to research problems peculiar to medical care administration.</td>
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<tr>
<td>80.106</td>
<td>Advanced Hospital and Health Administration</td>
<td>2 or 3 cr.</td>
<td>Interpretation and application of subject matter to hospital successful, national, and local policies, presented with emphasis on community and area community settings and implications.</td>
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<tr>
<td>80.107</td>
<td>Seminar: Problems of Administrative Behavior in the Modern Health Organization</td>
<td>3 cr.</td>
<td>Case study of innovations, role-playing, and similar approaches to develop students' administrative skills.</td>
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<tr>
<td>80.108</td>
<td>Problems of Administrative Behavior in the Modern Health Organization</td>
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<td>80.109</td>
<td>Current Developments in Hospital and Health Administration</td>
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<td>80.110</td>
<td>Theoretical Hospital and Health Administration</td>
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<td>80.111</td>
<td>Theory of Health and Administration</td>
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<td>80.112</td>
<td>Labor Relations in Health-Care Facilities</td>
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<td>80.113</td>
<td>Financial Management of Health-Care Organizations</td>
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<td>80.114</td>
<td>Health Care in America</td>
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<td>80.115</td>
<td>Role of government in the health-care system</td>
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<td>80.120</td>
<td>Hospital and Health-Care Issues</td>
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<tr>
<td>80.122</td>
<td>Advanced Hospital and Health Organization and Administration</td>
<td>4 cr.</td>
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### Undergraduate Program

Most important positions today require skill and responsibility in communication. The well-being of our communities and institutions depends upon accurate and responsible communications. The quality of our government depends on how well the print and broadcast media inform the electorate. Wherever a journalist chooses to work, he or she will be in a vital role—a role requiring an extensive knowledge of the diversity of human experience. Competent journalists must understand themselves, their relationship to an event, its actual reporting of their information and the effects of their work—what happens when the products of their creations are consumed by a reader, viewer, or listener.

### The Basic Program

Our program in general journalism requires 24 semester hours of coursework or journalism for the major. The student has a great deal of freedom to pursue other fields of interest. We strongly recommend a second major. Study in another area—sociology, art, economics, psychology, political science—provides excellent background for journalism.

The program stresses liberal arts background. It is designed to encourage students to become active questioners. In addition to occupational skills, students are expected to develop an understanding of what their work means to the society in which they live.

The program has no semester-long courses in newswriting, beginning reporting, copy editing, advanced reporting and other courses standard in most journalism programs. The two-year program—usually taken in the sophomore and junior years—places a great deal of responsibility on the student and offers him or her numerous opportunities to develop the skills of reporting, writing, and editing in his or her laboratory work.

Students enroll for four semesters in a general course and a laboratory course, for a total of 24 semester hours. Two semesters
ters of Communication and Communication Laboratory comprise the first-year studies. They are followed by two semesters of Communication and Mass Communications Laboratory.

The general course is scheduled for about two hours a day, five days a week. Sometimes all students meet together; sometimes they meet in small groups. Often, students schedule their own time to work on projects or attend short courses.

Over the two-year period the general courses include:

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

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

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

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

Required Courses for Undergraduate Program

- 19:101 Communication I
- 19:102 Communication Laboratory I
- 19:103 Communication II
- 19:104 Communication Laboratory II
- 19:105 Mass Communication I
- 19:106 Mass Communication Laboratory I
- 19:107 Mass Communication II
- 19:108 Mass Communication Laboratory II

Prerequisites

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

Electives

In addition to the 24 semester hours of general journalism courses, there are elective courses including photojournalism, picture editing, radio-television news, public relations, history, law, writing, news-editorial problems, and others. However, no more than 36 hours in Journalism may be counted toward the 124 hours needed for a Bachelor of Arts degree.

Practicum

The Journalism Practicum is open to majors and nonmajors. Any student can take a journalism internship or regularly employed as a journalist may enroll for discussion and expert review of his work or her work.

Teacher Certification

There is a strong demand for high school teachers who are qualified to teach journalism and are also certified in another subject. Full-time journalism teaching positions are rare in secondary schools in Iowa and most other states. If a student wishes to major in journalism and teach in secondary schools, he or she must take additional journalism elective courses and the required education classes. Twelve semester hours in journalism is the minimum requirement for certification, with an additional six to ten semester hours recommended.

Honors

The Department grants a degree with Honors in Journalism. An Honors seminar and readings for Honors are offered. Both may be repeated. In the reading class, a major paper is required at the terminal semester.

For Nonmajors

Courses designed to develop informed critics and consumers of journalism attract many nonmajors. They include Communication of Social Issues, Special Topics in Communication, History of Books and Print, Comparative Foreign Communications Systems, and Communication: Concepts and Perspectives, and others.

Transferring

Journalism courses taken at other colleges and universities will transfer as elective; but, in most cases, transfer students should expect to spend two years at Iowa to complete the general journalism major.

Graduate Programs

Master of Arts in Journalism

The School of Journalism offers a Master of Arts program which combines professional practice in the media with consideration of their effects, responsibilities and significance. It prepares students for a wide variety of positions in communication, including further study at the doctoral level. The degree is awarded with or without a thesis. Students who write a thesis must earn a minimum of 30 semester hours of graduate credit, n which a maximum of five semester hours may
be credit for the thesis. Those who do not write a thesis must earn a minimum of 38 semester hours of graduate credit, of which two or more hours must be in 19-180 Special Projects in Mass Communication. In both cases, at least nine semester hours of graduate credit must be taken outside the School of Journalism.

All candidates are required to take 19-205: Master's Seminar during their first semester in residence. This course seeks to incorporate fundamentals of theory, history, mass communication, popular culture, society, international communication and other thought-provoking subjects and topics encountered through guest speakers, pictures, assigned readings and written assignments. Each candidate must take at least three hours in Master's Practicum (19-205) in the area of his or her choice (newspaper journalism, magazine, public relations, radio, television, advertising, journalistic education, photojournalism, etc.).

The student satisfies the balance of the requirements with elective courses chosen in consultation with his or her advisor and the two other faculty members who serve as his or her committee. The program concludes with a comprehensive examination, the nature of which is specified by the candidate's committee.

Doctorate in Mass Communication

The doctorate in mass communication is an interdisciplinary degree. The central objective of the program is to develop scholars who will make significant contributions to teaching and research in communication.

The program emphasizes the development of an understanding of problems in communication. A student develops skills applicable to fields such as university teaching, news communication, organizational and institutional communication analysis, international communication and a variety of functions which require the ability to develop effective communication strategies.

The program is designed around a small core of graduate work in communication, but encourages the student to work with his or her sponsor and committee to create a program appropriate to the student's needs.

Every student in the doctoral program must take the Ph.D. Seminar (19-300) from the start of the program until after presentation and acceptance of the dissertation proposal. Beginning no later than the student's second enrollment and continuing until he or she begins work on the dissertation, he or she works in a Research Practicum (19-301) with one or more members of the graduate faculty. All Ph.D. students and all active graduate faculty members attend the weekly Ph.D. seminar, and thus have an opportunity to present, discuss and evaluate material.

A Ph.D. student, in order to continue in the program, must find before his or her third enrollment a graduate faculty member who will serve as sponsor and mentor. The sponsor need not also be the dissertation supervisor.

A minimum of 72 semester hours (excluding the dissertation) beyond the B.A. or B.S. is required for a doctorate. Upon completion of the coursework, a comprehensive examination is administered by a committee of at least five faculty members. The nature and scope of this examination is specified by the committee. The thesis work is supervised by a committee of at least five faculty members. A formal dissertation proposal is considered by this committee. For the final defense of the dissertation, the committee must include at least one member from outside the School's faculty. Also, one member of the dissertation committee will be appointed by the School's director of graduate studies to serve as the external member.

Candidates in both the M.A. and Ph.D. programs must fulfill the requirements of the Graduate College.

Special Facilities

The School has specialized laboratories for photography, typography, audio, videotape, video recording, typesetting, copy preparation and print production. The newsroom of the University radio station, WHUS, serves as a laboratory for broadcast journalism courses. Many pre-service students use the newsroom of the University student newspaper, The Daily Targus, as a professional laboratory. The School maintains a journalism reading room. The technology center houses most of the equipment students may use, such as tape recorders, still cameras, motion picture cameras, projection and editing equipment, material and slide copying equipment, and other audiovisual equipment. The School also has a small desktop computer.

Special Faculty Strengths

Most of the School's staff have had practical training and work experience in communication enterprises such as newspapers, broadcasting, public relations and advertising. A number are gifted, recognized, highly productive scholars.

Center for the Advanced Study of Communication

Affiliated with the College of Liberal Arts and housed in the School of Journalism, the Center for the Advanced Study of Communication offers students a variety of intellectual and practical opportunities through its publishing, research and program activities. The Center engages in the publication of books, an international scholarly journal and an occasional papers series; it contracts for research or consulting with government and private agencies on communication-related problems; and it develops seminars, colloquia and symposia on a wide range of communication-related issues both here and abroad.

Staff: Gallup professor Thysse; professors Duncan (on leave), MacLeod, Moeller; associate professors Fox, Hurd, Kottman, Talbot, assistants professors Ausbrock, Castillo, Hunt, Zima; instructors Asnet, Raver, Butler, Cox, Johns, Martin, Murphy, Tripp

Special Courses

1950 History Seminar 1 1-5 a.h.

Example reading, preparation of papers, discussion of mass communication problems, open to students only; may be repeated to a maximum of 15 semester hours; second semester

Reading for Honors 1 1-5 a.h.

Reading and discussion focusing upon a problem or issue in mass communication; major paper required; offered in semester; hours amount only; may be repeated; both semesters

1951 Senior Seminar 1 1-5 a.h.

Reports and discussion concerning major philosophical and social problems in mass communication with pre approval; seniors only, offered in semester and summer session.
Courses Primarily for Graduates

19-201 Master's Seminar in Mass Communications 3 s.h.

19-202 Seminar: Special Topics in Communication 3 s.h.

19-203 Seminar: Technical Theories of Mass Communications 4 s.h.

19-204 Seminar: Interdisciplinary Studies in Communication 3 s.h.

19-205 Seminar: Contemporary Communication Problems 3 s.h.

19-206 Seminar: Communication Theory and the Mass Media 3 s.h.

19-207 Seminar: Mass Communication and Social Change 3 s.h.

19-208 Seminar: Communication and the Law 3 s.h.

19-209 Seminar: Communication and Public Relations 3 s.h.

19-210 Seminar: Communication and Public Relations 3 s.h.

19-211 Seminar: Communication and the Media 3 s.h.

19-212 Seminar: Communication and the Media 3 s.h.

19-213 Seminar: Communication and the Media 3 s.h.

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19-286 Seminar: Communication and the Media 3 s.h.
Courses of Study

An undergraduate in letters may take courses from any of the departments of literature. A typical student might study classical and modern theater, oral literature and fiction from several countries. Or he or she might include work in film and practice in print see on a hand press. He or she may do all his or her readings in translation or may read in one or more foreign languages. There are no requirements for admission to the major; interested students should see the chairman or one of the advisers to the major.

Staff: Nagel, chairman (English and Comparative Literature), DeSantis (English and Comparative Literature), Frank (Spanish and Portuguese), Gibb (Speech and Dramatic Art), Greene (French and Italian), Holsmark (Classics), Parker (German), Weber (Russian), Woerner (English)

Courses

Students with a strong background in library science may elect to write a thesis, with approval of the director. Six semester hours of credit may be counted toward this degree. Some students, however, are advised to undertake the internship program.

The program normally requires two semesters and one summer of residency study; or, in the case of students attending summers only, a minimum of four summer sessions.

**Admission Requirements and Procedures**

Scholastic requirements for admission to the M.A. program include:

- A degree from an accredited college or university, with a minimum 2.5 grade-point average on a 4-point scale, and at least 85 semester hours of study in the liberal arts and sciences;
- At least one year of college credit (six to 10 semester hours) in a modern foreign language with a grade of C or better;
- Satisfactory scores on the Graduate Record Examination Aptitude Test.

Personal qualifications and aptitude for library work are assessed by means of letters of recommendation and a personal interview with the director of the School or a member of the faculty.

Because of the large number of applications, the School cannot accept every applicant who meets the scholastic admission requirements. The applicant's general suitability for librarianship is an important consideration. Priority is given to recent college graduates with a strong liberal arts background who desire to enroll as full-time students.

Applicants are requested to write to the School of Library Science for a Preliminary Information Form. If the preliminary information indicates satisfaction of the basic admission requirements, the School will schedule a personal interview. Prospective students are urged to apply four to six months before the date they want to be admitted.

**Certification in School Librarianship**

Students who desire to become school librarians may fulfill certification requirements within the M.A. program, or they may pursue the nondegree certification program described below.

The certification program, a 30-semester-hour sequence, accepts both undergraduate and graduate coursework, does not require a foreign language for admission and carries a more liberal policy toward transfer and correspondence credits than does the M.A. program.

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

All candidates for certification must complete the following course requirements:

Required courses (18 semester hours):

- 21:151 Reference I
- 21:152 Cataloging and Classification
- 21:152 Selection of Library Materials
- 21:154 Introduction to Librarianship
- 21:155 School Library Administration
- Three hours of audiovisual coursework

Elective courses (12 semester hours):

Students are encouraged to take a curriculum course for the grade level (elementary, junior high or high school) at which they expect to work. Other suggested courses:

- 21:123 Children's Literature
- 21:124 History of Children's Books
- 21:123 Practicum in Libraries
- 21:193 Literature for Adolescents
- 21:202 Literature for Young Children
- 21:234 Library Services to Children and Young Adults

With consent of his or her advisor, the student may select other library science courses.

For librarians serving up to half time in a school library, 15 semester hours of library science are required for certification as a teacher-librarian.

**Facilities and Resources**

New quarters for the School of Library Science in the south wing of the University's Main Library provide well-planned facilities for the visual instructional and research activities of the School. Included are laboratories for bibliography, cataloging and multimedia study, as well as a separate Departmental library science library.

All of the resources of the University of Iowa libraries are available to students and faculty of the School. The system contains more than 1.5 million volumes in the Main Library and its departmental branches and currently employs 60 professional staff members.

In addition to the University Libraries, students have access to various local libraries in Iowa City and nearby communities for clinical and laboratory purposes. The State Historical Society Library in Iowa City, the Iowa City and Cedar Rapids public and school libraries, the Coe, Cornell and Grinnell college libraries, and, by arrangement, the Herbert Hoover Presidential Library in West Branch, Iowa.

**Financial Assistance**

The School of Library Science annually awards several tuition scholarships, as well as quarter-time graduate and research assistantships. Prospective students are urged to apply for these awards before March 1. Students interested in part-time employment should contact the librarians of the Iowa City area.

Staff members: O'Brien, Weisman. Associate Professor, Director; assistant professors, Blalock, Ogden; instructors, Lawrence, M. A., Lange

Administrative Assistant: Ethel Bloom

Librarian: Karen S. Hildebrand

Affiliated Staff: Dale M. Berts, G. Robert Carlisle, Lusie W. Durlap
stitution of his or her native language, explaining how languages change in the process of their transmission from one generation to the next, or characterizing regional and social variation in language—are extensions of this main one.

Since language is uniquely human, and since the use of lan-
guage is central to almost everything we do, the finding of linguistics bear upon other fields of study which deal with human behavior: anthropology, sociology, psychology, literature, the teaching of languages, the diagnosis and treatment of speech disorders Moreover, the formal properties of grammar (that is, of models of "linguistic competence") are of interest to math-
ematicians and computer scientists.

Students majoring in other disciplines concerned with lan-
guage or with symbolic systems (as for example, modern or classical languages and literatures, speech science, anthropology, psychology, philosophy or mathematics) are encouraged to com-
plement the study of their major subject(s) either at the graduate or the undergraduate level—with relevant courses in linguistics.

**Undergraduate Program**

The undergraduate program is designed to provide a foundation in linguistic theory, training in the scientific analysis of languages and proficiency in a language other than the one native to the student. Specifically, the program includes work in general lin-
guistics, phonetics, grammatical and phonological analysis, study of the history or structure of a particular language (courses in this area are currently available for several languages, includ-
ing English, the Romance languages, Russian, German and Chi-
inese) and other courses in linguistics to be selected in consulta-
tion with the student's advisor. In addition to his or her work in
linguistics proper, the undergraduate student's program in-
cludes elementary courses in psychology, anthropology, lan-
guage and culture. The total program includes elective in one
or more fields as well as core courses in linguistics. The number of language study included in the student's program depends upon his or her pre-university language training. During the senior year the stu-
dent undertakes an independent research project under the di-
rection of a member of the Linguistics faculty.

**M.A. Program**

The Master of Arts program in linguistics provides graduate training in general linguistics to students from a variety of academic backgrounds who have an interest in languages and the theory of language. The program is adaptable to the needs of students who plan to pursue further graduate study in linguis-
tics or related fields, of students who wish to complement their undergraduate training in related fields (e.g., language teaching or anthropology) with specialized training in linguistics. Gradu-
ate courses are also open to qualified students who are taking degrees in other fields.

The M.A. program of study includes a graduate introduction to linguistics, two courses in syntactic theory, two courses in the general area of historical and comparative linguistics, and other courses in linguistics and related fields, to a total of 37 semester hours of coursework. A thesis is also required.

**Ph.D. in Cultural Anthropology and Linguistics**

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

courses and, in most cases, a period of field work.

The content of the anthropological-linguistic doctoral program may be adjusted to accomplish an emphasis either in an-
thropology or in linguistics, or a balance of the two. The only explicit requirements are the acquisition of two appropriate re-
search tools from a list which includes a foreign language, statis-
tics, symbolic logic and computer programming, introductory 
completion of a basic series of courses in linguistics and in an-
thropology (in linguistics, courses in general linguistic theory, phonetics, grammatical analysis, phonological analysis and historical-comparative linguistics; in anthropology, courses in anthropological history, theory, or methods, social anthropology, social institutions and an ethnic-geographic area); and satisfactory completion of a series of interdisciplinary courses in language and culture, ethnolinguistic field methods and ethnolinguistic theory.

Beyond this basic training, the candidate for the Ph.D. in cultural anthropology and linguistics may concentrate in one of the two areas with further work or may achieve a balance be-
tween the two. At the completion of the core program, each
student's achievement is both areas is evaluated by a joint com-
mitee of the two departments, and appropriate recommenda-
tions are made.

It is not necessary that the student entering the program have taken an undergraduate major in either anthropology or linguis-
tics. However, the student must have the equivalent of the introdutory courses in linguistics and anthropology (103:200 and 115:101), these must be made up as deficiencies.

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

**Ph.D. in English with a Major in Linguistics**

The program of study leading to the Ph.D. degree in English with a major in English linguistics consists of a thorough founda-
tion in linguistic theory and the methods of linguistic research

with intensive study and research in the structure and history of the English language and some study of English and/or American literature. Normally the holder of such a degree would be a competent teacher and researcher in a university English department, but he or her training under this pro-
gram might lead to other related fields.

The major part of the training in this program is in general
linguistic theory and English linguistics. Subordinate areas are
literature and the older Indo-European languages. The student is also expected to take appropriate courses in a related area or related areas—for example, history, philosophy, art history.

The linguistics area of the program is planned in consultation
with the student's advisor. It is expected to include work in
syntactic, phonological and dialectological. The English linguistics area
includes Old English, Middle English, the structure of English, the history of the English language and the teaching of English as a second language. An important part of the program is a seminar of directed research—usually in the last year of coursework—in the structure of Modern English, the historical development of English and the period of the history of the English language which corresponds to the literary period the student has chosen for study.

Literary study includes, at least, Beowulf, Chaucer and Shakespeare, as well as a literary period of the student's choice. Contrary to traditional expectations, the student of English linguistics does not have to be a medievalist—students in this program have concentrated in literary studies ranging from the Old English period to the twentieth century.

In the area of the older Indo-European languages, there are regular offerings in Germanic (Old High German, Middle High German, Old Saxon, Old Norse, Gothic), Romance (Old French, Old Spanish), Greek and Latin. Upon demand, courses have been offered in Old Provencal and Old Irish. The student of English linguistics is encouraged to take at least one course in an older Germanic language and at least one additional course in German or one of the other old Indo-European languages.

The program of the doctoral student in English linguistics is rounded out by work in such areas as medieval history, the philosophy of language, language and culture, and psycholinguistics.

The comprehensive examination for the degree consists of written and oral parts. In the written portion of the examination, the student is examined on general linguistics, the structure of Modern English (including American dialects), the history of the English language and the literary period elected. The oral examination may range over all these areas.

The dissertation treats some topic in the history of English, in the structure of English at any stage of its historical development or in any of its dialects, or in applied English linguistics.

Special Facilities

The Department of Linguistics has an acoustics laboratory, consisting of a sound spectrograph, a studio-type tape recorder and an audiometric chamber. There is also a remote typewriter terminal connected with the IBM 360/65 computer at the University Center.

The Faculty

Although the Department of Linguistics is new (established in September, 1970), it has a growing reputation not only in the West but nationally. Members of its faculty have achieved national recognition in the areas of stylistics, American Indian language and the history of the English language. The status of linguistics at The University of Iowa is well deserved, since linguistics was being taught in the Department of English at The University of Iowa before the "father" of American structural linguistics, Leonard Bloomfield, published his famous book, Language, in 1933.

The Department of Linguistics is small (currently nine faculty members and approximately 35 students enrolled as undergraduates and graduate majors) and enjoys all the benefits of smallness: a close relationship between faculty and students, a considerable influence of students upon Departmental affairs and a high degree of individual instruction. A large part of the student's education in linguistics is conducted informally in 571 English-Philosophy Building—the general "work-room" and Departmental library—through daily "tut sessions" between students and faculty members. The blackboard in that room is always filled with phonological rules, syntactic "trees" and other evidence of the activity of linguistics.

All graduate students and senior undergraduates meet once a week for an hour and a half with members of the faculty to keep abreast of current research in the "Survey of Current Research in Linguistics," at which a student presents a critical review of some recently published piece of linguistic research. Staff: professors: Hentscher, McCalland, McLaughlin, Puff, associate professors: Wacht, Suga, assistant professors: Kozlowks, McClaugh, instructor Martin; (interdepartmental faculty: Bowers (Speech), Cristofoli (Classics), Curtis (Speech Pathology and Audiology). Dusauer (German), Fleck (Computer Science), Grenmair (Russian), Heretosanu (Computer Science), Moii (Speech Pathology and Audiology), Vrumsen (French and Italian), Raua (German), Stanton (Spanish and Portuguese).

Courses for Undergraduates and Graduates

520/10 English for Foreign Students

3-5 hrs.

Training in spoken and written English for non-native speakers of English. Instruction in the practical use of the English language.

520/12 Introduction to Linguistics

3 hrs.

Variety of topics in general linguistics; same as English 140.

520/141 Introduction to Language and Communication

3 hrs.

Methods and sources in area of interrelationships between linguistics and communication theory; same as Speech 309/302.

520/116 Articulatory and Acoustic Phonetics

3 hrs.

Acoustical and aerodynamic properties of speech; resonance in phonetic transcription.

520/117 Linguistics Analysis I

3 hrs.

Phonological theory: procedures for analyzing and describing phonological structures of languages; prerequisites: 302/10 or equivalent.

520/118 Linguistics Analysis II

3 hrs.

Principles and methods for analyzing and describing grammatical structures of languages; prerequisites: 310/12 or equivalent.

520/119 Introduction to Language Data Processing

3 hrs. each

Workshop type course on processing language data; knowledge of Linguistics or mathematics, or 301B Knowledge of computers or programming necessary. Course focuses on analyzing problems and determining means to handle problems and procedures in computer programs and operating systems. Satisfies also requirement, 520/114.

520/123 Historical and Comparative Linguistics I

3 hrs.

Principles of historical-geographic and genetic classification of languages, internal reconstructions and language typology; same as English 162; prerequisites: 310/12 or equivalent.

520/124 Romance Linguistics

3 hrs.

Comparative and diachronic Romance languages; same as Spanish 213/125.

520/125 History of the English Language

3 hrs.

Development of phonological and grammatical structures of English from Old to Modern English, dialectal differentiation in English; same as English 182; prerequisites: 520/120 or equivalent.

520/126 The Structure of English

3 hrs.

Application of contemporary linguistic theory to analysis and description of structure of modern English; same as English 182; prerequisites: 520/120 or equivalent.

520/127 English Grammar

3 hrs.

Views of English grammar in relation to contemporary structural and transformational approaches to grammar of modern English; same as English 182.

520/128 English Phonetics

3 hrs.

Current state of English phonetics; same as Speech 201.
Linguistics

103:142 German Phonology 3 s.h.
Structure of sound systems of German language; introduction to problems of Ger-
man morphology and syntax; basic linguistic concepts; same as German 11:155.

103:242 Structure of Modern English 3 s.h.
Seminar in American Studies 29:138; no knowledge of Chinese required.

103:247 Linguistics of Contemporary Russian 3 s.h.
Seminar in Russian 41:121.

103:300 Development of Standard High German language from medieval dialecti-
130:500; advanced readings in works representative of dialect Areas; and of attempts to stabilize diplomatic norms; same as German 13:549.

103:189 Linguistic Analysis 3 s.h.
Wittgenstein and development of ordinary language philosophy; presuppositional con-
cept of instruction; same as Philosophy 30:163.

103:171 Language and Culture 3 s.h.
Framen in communicative aspects of human language, speech as event, communication networks, language classification, interlingual communication; same as Anthropology 13:140, presuppositional research in instruction.

103:292 Introduction to Psycholinguistics 3 s.h.
Survey of contemporary approaches to language behavior intended primarily for undergraduate Experimental majors; background in physics, recommend;
ated as same as Speech Pathology and Audiology 3:117.

103:173 Language Teaching and Linguistic Behavior 3 s.h.

Course Prerequisites for Graduates

103:280 Prose-writer in Linguistics 3 s.h.
Linguistic theory and analysis for beginning graduate students in linguistics and fis-
graduate students in other disciplines in which more than passing familiarity with register is of some use are 3:625.

20300 History of Linguistics 3 s.h.
Topics in history of linguistics, literature & language and convergence.

103:210 Linguistic Structures 3 s.h.
Analysis of grammatical analysis and phonological structure of selected language or languages (languages) considered from year to year; may be repeated for credit with change in language material, presuppositional content of instruction.

103:330 Introduction to Computational Linguistics 3 s.h.
Computational theory from ancient times to present; contemporary developments in literary and linguistic computational paradigms.

103:294 Syntax: Analytic Grammar: Generative Grammar 3 s.h.
Concurrent registration recommended. Presupposition 3:122 or equivalent.

103:316 Methaphorical Linguistics 3 s.h.
Same as Computer Science 3:202.

103:194 Dialectology 3 s.h.
Linguistic geography and comparative study of dialects; structural and generative approaches to dialectology; historical and social studies in American English; presupposition: 130:300 or equivalent.

20327 Linguistic Typology 3 s.h.
Approach to classification of languages on basis of grammatical and phonological structure.

103:205 Experimental Psycholinguistics 3 s.h.
Critical review of research procedures and findings in psycholinguistics; topics include perception, memory and production; research project required; same as Speech Pathology and Audiology 3:320.

103:318 Field Methods in Ethnolinguistics 3 s.h.
Ethnolinguistics: methods and techniques of collecting, analyzing, and interpreting data, infinite of analysis, and design, and research design; same as Anthropology 1:190.

103:300 Survey of Linguistic Theory 3 s.h.
Cultural and linguistic dimensions of human communality; same as As-
thropology 1:135, presuppositional documentation.

103:301 History of the German Language 3 s.h.
Development of German language and dialects since prehistoric times to present; same as German 13:340.

103:103 History of the Balto-Slavic Language 3 s.h.
Seminar: Languages from earliest times to present; same as Language 1:35, presuppositional: Old Old; same as German 13:549, presuppositional: Old Old;

103:340 Middle English Language and Literature 3 s.h.
English 3:400.

103:336 Early Modern English Language and Literature 3 s.h.
English 3:400.

103:390 Elementary Old English 3 s.h.
Structural of Old English, its historical position in Germanic group of languages, reading of actual texts; same as English 3:830.

103:300 Old Norse 3 s.h.
Old Irish; some consideration of Old Danish, Old Swedish, Old Norwegian, reading of inflected texts; same as English 3:820.

20325 Middle High German 3 s.h.
Grammar of High German literature language from eleventh to fourteenth centuries; selected readings from literature of period; same as German 13:243.

103:223 Old English Literature 3 s.h.
High German diacritics in earlier recorded forms; cultural, political, social influ-
ences exerted upon them from within and without the German-speaking area (eight to eleventh centuries); selected readings from literature of period; same as German 13:243.

103:354 Old High German 3 s.h.
Languages other Old Germanic languages; historical position of Old Germans with respect to other Germanic languages; presuppositional: Old and Old High Ger-
man; Old English. same as German 13:246.

103:250 Ostfrische and northern High Germanic languages; introduction to comparative Indo-European linguistics; same as German 13:347.

103:290 Old Spanish I 3 s.h.
Same as Spanish 3:351.

103:281 Old Spanish II 3 s.h.
Same as Spanish 3:352.

103:372 Historical Processes and Language Behavior 3 s.h.
Presuppositional variable affecting acquisition, interaction, innovation of verbal behavior, including role of language structure and language habits, same as Psychology 3:347.

103:270 General Experimental Phonetics 3 s.h.
Supervision current information and theory concerning acoustic, phonological and perceptual characteristics of speech; emphasis on research techniques, same as Speech Pathology and Audiology 3:250. presuppositional: 130:132 and 3:50, or consent of instructor.

103:275 Experimental Phonetics Laboratory 3 s.h.
Supervised laboratory projects in analysis of acoustic, physiological and percep-
tual characteristics of speech; same as Speech Pathology and Audiology 3:250, same as Psychology 3:132.

103:300 Survey of Current Research in Linguistics 3 s.h.
Weekly discussions by staff and students of current published literature in field of linguistics covering all graduate courses in linguistics for each semester.

103:312 Seminar: Problems in Linguistics 3 s.h.
Preparatory study of selected theoretical and practical problems; topic varies each year.

103:310 Advanced Psycholinguistics 3 s.h.
Advanced study of selected theoretical and practical problems; topic varies each year.

103:330 Seminar: Germanic Linguistics 3 s.h.
Selected papers on theoretical and practical problems in linguistics.

103:343 Seminar: Proto-Germanic phonology and morphology; same as German 13:347.

103:340 Seminar: Modern German Linguistics 3 s.h.
Survey of problems; same as German 13:341.

103:380 Seminar: Experimental Phonetics 3 s.h.
Supervision current information and theory concerning acoustic, phonological and perceptual characteristics of speech; emphasis on research techniques, same as Speech Pathology and Audiology 3:250, or consent of instructor.

103:394 Seminar: Communication Research Language 3 s.h.
Seminar as Speech 3:327.

103:397 Problems in English Linguistics 3 s.h.
Directed research in structure and/or history of English language; may be re-
scheduled for credit in advanced research areas, for credit; same as English 3:837.

103:398 Special Projects 3 s.h.
arr. or.

103:450 Ph.D. Thesis 3 s.h.
arr. or.
Division of Mathematical Sciences

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

Undergraduate Program

The Division has a comprehensive undergraduate program in which undergraduate students who seek a major in mathemati-
cal sciences may plan studies which will lead to (and may in-
clude) advanced work in one or more departments of the Divi-
sion. The Division offers two majors.

One is a general major in which the student may choose courses
from any of the three departments in the Division of
Mathematical Sciences and which must include substantial work
in at least one of the three departments. A number of suggested
programs for completing this major are listed below.

The second major is intended for students with a strong inter-
est in computer science. This program requires both substantial
work in computer science and 12 semester hours of work in an
area outside of computer science. The work outside computer
science is expected either to prepare the student for further work
in computer science or to familiarize the student with an area
in which he or she might do computer programming, designing
or other computer work (for example, engineering, physics, busi-
ness administration or economics).

The specific requirements of each of these programs are listed
below. In addition to the requirements listed here, each student
majoring in the Division of Mathematical Sciences must satisfy
the general requirements of the College of Liberal Arts. Credit
may be transferred from other institutions, but transfer students
must take a minimum of nine semester hours beyond the first
year of calculus or beyond the first course in computer science
(22C:7 Introduction to Computing with Fortran).

Requirements for a Major in Mathematical Sciences

To satisfy this program a student must take at least one year of
(calculus (either 22M:25 and 22M:26, or 22M:33 and 22M:34)
and at least seven courses, each carrying at least three hours of
credit offered by the Division, but not including:

22C:1 Survey of Computing
22C:9 Programming with Business-Oriented Lan-
guage

22C:100 Introduction to Computing with Fortran
22C:117 Computing with PL/I
22M:1 Basic Mathematical Techniques
22M:2-3 Mathematical Techniques I-II
22M:4 Matrix Algebra
22M:7 Quantitative Methods I
22M:10-11 Fundamentals of College Mathematics I-II
22M:15-16 Introductory Mathematics for the Biological
Science I-II
22M:20 Elementary Functions
22M:25-26 Calculus I-II
22M:29 Computational Techniques of Calculus and
Linear Algebra
22M:35-36 Engineering Mathematics I-II
22M:40 Quantitative Methods II
22S:25 Elementary Probability and Statistics
22S:43 Introduction to Statistical Methods
22S:80 Insurance Mathematics

Except for students seeking a secondary teaching certificate,
the seven courses must include two chosen among:

22C:122 Advanced Computer Organization
22C:123 Programming Languages
22C:135 Introduction to Computation Theory
22C:145 Artificial Intelligence
22M:100 Differential Equations
22M:118 Complex Variables
22M:170 Numerical Methods
22M:171 Numerical Solutions of Differential Equa-
tions
22M:103-104 Foundations of Mathematics I-II
22M:110-111 Elementary Topology
22M:115-116 Introduction to Analysis I-II
22M:120-121 Abstract Algebras I-II
22M:130-131 Elementary Theoretical Mechanics I
22M:39-132
22S:153-154 Introduction to Mathematical Statistics I-II
22S:164-165 Introduction to Probability I-II
22S:177 Numerical Analysis for Actuaries
22S:178 Graduation

Students who complete the requirements for a secondary
Teaching certificate may satisfy this requirement by taking any
two 100-level courses. Students should not change from one of
the calculus sequences (22M:25-26 and 22M:33-34) to the
other, since the material is organized differently in the two se-
quences.

Suggested Programs

Some typical programs in various areas are listed below. They
need not be followed exactly; in fact, it is expected that each
student will meet with his or her advisor and work out a program
which reflects his or her mathematical interests. The require-
ments are flexible enough to allow for changes in a student's
interests.

General Program

Unless a student has a strong interest in a special area in math-
ematics, a rather general program is suggested. This type of
program should include 22C:7 Introduction to Computing with
Fortran, preferably along with calculus during the freshman
year. The program should also include a course such as 22M:30
Elements of Group Theory, 22M:55 Fundamental Properties
of Spaces and Functions or 22M:103 Foundations of Mathematics,
and it should include at least a semester's work in statistics and
probability.

Additional work, in particular the 100-level course require-
ment, should be taken in whatever area of mathematical sciences
is of most interest to the student. Students contemplating em-
ployment in government or industry upon completion of the
B.A. degree should consider 22C:17 Computing with PL/I and
courses in numerical analysis, applied statistics and operations
research.
Division of Mathematical Science

Actuarial Science

The student who plans to enter the actuarial profession should be guided in his or her selection of courses by the program of education and examinations carried on by the principal actuarial organizations. This means that following a sequence in calculus and minor algebra (22M:25-28 Calculus I-IV) or 22M:35-38 Engineering Mathematics I-IV, the student should embark on 22M:133-154 Introduction to Mathematical Statistics I and II, 22S:177 Numerical Analysis for Actuaries and 325:178 Graduation. Additional courses of direct professional interest to actuaries include 22S:178 Graduation, 22S:179 Advanced Mathematics of Finance, 22S:180 Mathematics of Life Insurance, 22S:181-182 Actuarial Theory and Practice, 22S:183 Construction of Demographic Tables and 22S:184 Risk Theory.

Normally a student would not complete all of these courses during the undergraduate years. Instead he or she would be advised to take a more general program and to consider completing the actuarial courses as part of a graduate program. Students of actuarial science are also advised to take at least one course in computer science and to consider a substantial program of courses among those offered by the College of Business Administration.

Applied Mathematics

All students interested in applied mathematics should take the sequence 22M:25-28 Calculus I-III and Linear Algebra or the sequence 22M:25-38 Engineering Mathematics I-IV.


Students in applied mathematics should be familiar with computer programming (22C:7 Introduction to Computing with Fortran) can be taken early along with calculus) and with the basic ideas of probability and statistics (the courses 22M:153-154 Introduction to Mathematical Statistics I and II or 22M:150 Probability and Statistics are appropriate). Students who plan to do graduate work in applied mathematics should take 22M:115 Introduction to Analysis I.

Mathematics Education

For the requirements by teacher certification, see "College of Education." The following program is suggested for students having an interest in mathematics education:

• The sequence 22M:25-28 Calculus I, II, III and Linear Algebra.
• 22M:30 Elements of Group Theory (before 76:135 Education) and 22M:70 Euclidean Plane Geometry.

• In the 100-level courses, the student should strive for exposure to the following areas (broadly preferred over depth): 22B:100-101 History of Mathematics, 23M:100-104 Foundations of Mathematics, 23M:115-116 Introduction to Analysis and 22M:110-111 Elementary Topology.

In addition, the student should take at least two semesters of coursework outside the Mathematics Department but within the Division of Mathematical Sciences, e.g., 22C:7 Introduction to Computing with Fortran, 22C:17 Computing with PL/1, 22S:153-154 Introduction to Mathematical Statistics and 22S:164 Introduction to Probability.

Pure Mathematics

Students interested in this area of mathematics should take two of the sequences 22M:120-121 Abstract Algebra, 22M:115-116 Introduction to Analysis, 22M:103-104 Foundations of Mathematics and 22M:110-111 Elementary Topology. The student should also take at least two semesters of coursework outside this area. For example, 22C:7 Introduction to Computing with Fortran, 22C:17 Computing with PL/1, 22M:100 Differential Equations, 22M:118 Complex Variables, 22M:153-154 Introduction to Mathematical Statistics or 22S:164 Introduction to Probability.

Probability and Statistics

The basis for this program is the calculus sequence 22M:25-28 Calculus I-III, Linear Algebra and 22M:35-38 Engineering Mathematics I-IV, together with one of the three sequences: 22M:153-154 Introduction to Mathematical Statistics, 22M:164-165 Introduction to Probability, or 22S:9 Probability and Statistics for Engineering and Physical Sciences and 22S:152 Engineering Statistics. Students should also select one or two courses in computer science from 22C:7 Introduction to Computing with Fortran, 22C:17 Computing with PL/1 or 22C:18 Assembly Language Programming and one or two courses in mathematical analysis from 22M:55 Fundamental Properties of Space and Functions, 22M:105 Analysis for Applications and 22M:115 Introduction to Analysis I. Substantial work in one of the biological, social, physical or engineering sciences is also highly recommended.

Courses offered on a demand basis allow a student to augment these suggested programs so as to prepare for a vocation in statistics upon graduation. However, this would require very tight scheduling and a total sacrifice in the breadth and maturity to be gained in a more liberal program. Thus a student normally should be guided by the suggested program and plan of completing professional preparation in graduate study.
Requirements for a Major specializing in Computer Science

Undergraduates specializing in computer science should gain a strong foundation in mathematics and in programming languages and computer systems. To accomplish this, the following core courses are required for a B.A. degree in the mathematical sciences concentrating in computer science:

- 22M:25 Calculus I 4 hrs.
- 22M:26 Calculus II 4 hrs.
- 22M:27 Introduction to Linear Algebra 4 hrs.
- 22C:7 Intro. to Computing with Fortran 3 hrs.
- 22C:17 Computing with PL/I 3 hrs.
- 22C:18 Assembly Language Programming 3 hrs.
- 22C:23 Programming Concepts 3 hrs.
- 22C:31 Computer Organization and Programming 3 hrs.
- 22C:50 Discrete Structures 3 hrs.
- and one from the following:
  - 22M:50 Elements of Group Theory 3 hrs.
  - 22M:167 Graph Theory 3 hrs.
  - 22C:135 Computation Theory 3 hrs.
  - 53:172 Switching Theory 3 hrs.

Each undergraduate student must also complete 12 semester hours of courses in a field related to computer science with at least one course at the 100 level. Suggested fields are engineering, physics, mathematics, statistics, business administration and economics. If mathematics is selected the courses must be in addition to those listed as fulfillment of the basic core requirements.

Other courses strongly recommended by the computer science faculty are:

- 55:10 Logic and Digital Systems
- 56:141 Operations Research
- 56:141 Digital Systems Simulation I
- 52:168 Analog Computing
- 24M:130 Probability and Statistics
- 22M:170 Numerical Methods

Applied Mathematical Science

Committee Chair: William F. Ames

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

Creative activities of an applied mathematical scientist include the formulation of scientific concepts and problems in mathematical terms, the solution of the resultant mathematical problems; the discussion, interpretation and evaluation of the results of his or her analysis; the exploration of new ideas and areas of application; and the development of mathematical theories in areas which have not historically been expected to make systematic mathematical treatment. These efforts may, in turn, lead to the generation of new mathematical ideas and theories, at a result of the application of modern techniques.

Students applying for admission are expected to have an excellent background in science and mathematics, together with a desire to apply mathematics to the solution of relevant scientific questions. Each student will have a committee of three or more faculty members to guide and carefully supervise his or her program. The individual plan of study will be specifically developed by incorporating the desired balance in the appropriate science, advanced mathematics and applied mathematical science with the student's background, interests and goals.

A major objective of the program is to have the development of each student's dissertation follow the full cycle of research in any applied mathematical science. Guided by the supervising committee, each student is expected to recognize a significant problem within his or her science. Thus he or she develops an appropriate mathematical model for that problem, critically examines that model with respect to its tractability and success in prediction, and develops improvements if necessary.

Since this is a P.H.D. program, students may enter with either a bachelor's or a master's degree. All applicants must satisfy the general requirements of the Graduate College. Fellowships, graduate tuition scholarships and some research and teaching assistantships are available to qualified applicants. Teaching and research assistantships carry stipends appropriate to the work done, and pay up to $3,500 for the nine-month academic year. Tuition is not included, but some tuition scholarships are given to graduate assistants and, in most instances, the much lower in-state tuition rate is charged. Students are eligible for federal fellowships and traineeships. Doctoral candidates are also eligible for four-year Teaching-Research Fellowships. Under this plan, one or two years will be spent in teaching and one or two in research assignments. During the final year the student will receive a fellowship for uninterrupted study, private research and writing. The stipend is $3,600 for 12 months, plus tuition.

Applications for these appointments must be received before March 1, in any year. For application forms and further information about the academic program, write to Chair, Program in Applied Mathematical Science, Graduate College, The University of Iowa, Iowa City, Iowa 52240.

Computer Science

Department Chair: John D. Voss

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

Computer science is a mathematically-based discipline concerned with algorithms and informatics. Since only the existence of the digital computer makes the existence of algorithms and the manipulation of information practical, computer science is concerned with the digital computer in a central way. Thus the computer scientist will be informed about engineering aspects of computer science and mathematical and other applications
of computers. More directly, the computer scientist must be competent in programming and at the same time have an understanding of the capabilities and limitations of digital computers relative to information and algorithms.

To provide the broadest possible background for its students and to take advantage of courses offered naturally in other fields, the normal curriculum in computer science includes work in several related fields. Within limits, an advanced degree program in computer science can be constructed to serve a particular need of a student. However, a certain core of courses should generally be taken by any candidate for an advanced degree in this field. It should be emphasized that if a student is concerned about a specific subject area in which computer science is a necessary but not a major part of his or her goal, then the student must be better served by taking his or her degree in that other area with a heavy concentration of courses in computer science. The Department offers the degree B.A. in Mathematical Sciences jointly with the Division of Mathematical Sciences, the M.S. and Ph.D. in computer science.

Undergraduate Program
See "Division of Mathematical Sciences"

Graduate Service Course Sequence
In many disciplines a prerequisite to advanced study and research is comprehension of the use of a digital computer. The faculty of the Department endorses the study of computer science by graduate students so as to gain the necessary proficiency in the use of a computer. However, the Department will not certify such competence in the area of computer science. Instead, the department which urges a graduate student to gain proficiency in this field is expected to verify that such proficiency has been gained.

The following sequence of courses is recommended for gradu- ate students in other disciplines wishing to gain proficiency in the use of the computer:

22C:100 Introduction to Computing with FORTRAN 2 s.h.
22C:117 Computing with PL/I 2 s.h.

These two courses provide the student with a basic understanding of the capabilities of computers and experience in writing programs in two of the most widely-used programming languages, FORTRAN and PL/I.

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

Graduate Program
Although the plan of study of each advanced degree student is individually arranged to fit his or her needs, each student will be expected to study in the area of programming, computer systems and computation theory. The specific requirements for the M.S. and Ph.D. degrees follow.

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 in four-year colleges. The Ph.D. student can find the same opportunities and in addition can find a career in research and teaching at the advanced level.

Master of Science

Admission
The student seeking admission is subject to the general rules of the Graduate College (see "Graduate College"). Although the student's undergraduate major is not specified, it is strongly recommended that the candidate for the degree have a B.A. or B.S. in mathematics, engineering or physical science. If the student's undergraduate program does not include equivalents of the courses listed in the undergraduate program in Computer Science of the Division of Mathematical Sciences, he or she may be expected to complete these courses prior to admission to graduate courses for which these are prerequisites.

Requirements

Upon admission, the chairman will appoint an advisor for the student. The advisor and student will draw up a plan of study which will assure that the candidate achieves proficiency equivalent to that which can be gained as follows:

22C:122 Advanced Computer Organization 3 s.h.
22C:123 Programming Languages 3 s.h.
22C:139 Introduction to Computation Theory 3 s.h.
22C:193 Problems in Computer Science 1 s.h.
Other 22C courses 6 s.h.
Mathematics and statistics courses 6 s.h.
Additional courses selected by the student with the approval of his or her advisor 7 s.h.
30 s.h.


M.S. comprehensive Examination
The candidate for the M.S. degree must successfully complete a set of written comprehensive examinations as described below. The examinations may require an oral review of the comprehensive examination. All M.S. candidates must take both parts of the exam.
Part I: Fundamental Concepts
The student must take parts A, B and C.

A. Programming (two hrs.)
B. Computer Systems and Hardware (two hrs.)
C. Computation Theory (two hrs.)

The material covered on these exams is that typically taught in 22C/122 Advanced Computer Organization, 22C/123 Programming Languages and 22C/135 Introduction to Computation Theory.

Part II: Specialty Area
The student must take one of the parts listed below. Each exam lasts two hours, except part F which lasts for three hours.

A. Advanced Programming
B. Advanced Computer Systems and Hardware
C. Advanced Computation and Automata Theory
D. Artificial Intelligence
E. Matrix Theory and Numerical Analysis
F. Any one of the standard master's examinations offered by the Mathematics or Statistics Departments.

A student should consult the detailed topical outline of the master's examination which is available in the Mathematical Sciences Division office and library.

Thesis
The M.S. thesis, if the student elects to write one, must be an original contribution to computer science of at least moderate importance. It may be in any area deemed acceptable by the thesis committee. An oral defense of the thesis will be required in addition to the comprehensive examination.

Doctor of Philosophy

Admission
Admission to candidacy for the Ph.D. degree is granted only upon the recommendation of a faculty sponsor and the approval of a Departmental committee. The Department cooperates with the Program in Applied Mathematical Sciences in developing interdisciplinary doctoral programs.

Requirements
The student's adviser and chairman will select the guidance committee, which will help the student draw up a plan of study for his or her Ph.D. work.

The student will be expected to complete at least 30 semester hours beyond the bachelor's degree, including a thesis. The student need not have a master's degree when he or she starts the Ph.D. curriculum, nor need he or she acquire one. However, it is the usual case that the Ph.D. student first acquire a master's degree in computer science or in some other mathematical or physical science. Every Ph.D. student in computer science is expected to be knowledgeable in all areas recognized as belonging to the field of computer science and to be expert in at least one field. At present, the computer science student should be knowledgeable in the following four categories:

- Programming concepts, including programming, programming languages, systems theory, applications programming, simulation, artificial intelligence and numerical analysis
- Theory of computation, including automata theory, computability and formal languages
- Mathematical foundations, including set theory, algebra, analysis, logic and graph theory
- Computer systems, logical design and switching theory

Although the plan of study for each student will be drawn up by the student and his or her committee to fit his or her special needs, every student is expected to complete approximately half of his or her coursework in the first two categories. Moreover, he or she is expected to complete at least half of the coursework in courses numbered 200 or above. Finally each student must complete two semester hours of 22C/193.

To ensure breadth of preparation in certain areas, the student must complete three courses, at least one of which is at the 200 level, with grades of A or B in each of these areas.

Two selected from:
- Algebra
- Analysis
- Logic and set theory
- Statistics and probability
- Numerical analysis

The third may be selected from:
- Electrical engineering
- Operations research
- Business administration
- Linguistics
- Other related areas as approved by Department

Ph.D. Comprehensive Examination
A student is admitted to candidacy for the Ph.D. degree in computer science only after he or she has completed the comprehensive examination described below, provided he or she has been recommended by a member of the computer science faculty. The comprehensive examination will normally be taken only when the student has completed coursework as required by the plan of study. The written examinations, which may be followed by an oral review, are as follows:

Part I: Programming and Systems Concepts
A three-hour examination on all aspects of programming languages and systems

Part II: Theory of Computation
A three-hour examination on the theoretical aspects of computer science

Part III: Candidate's Specialty Area
An examination to be prescribed for the student

Descriptions of all the examinations are at the computer science offices.

Thesis
Each student must write a thesis which is a significant original contribution to the field of computer science and successfully defend it in an oral examination conducted by the doctoral committee.

Staff: professors Weep, Eley, associate professors Dolch, Fleck, Mukhopadhyay; assistant professors Baron, Toaster, McClain, Alton, instructors Spjdersma, Woman
Mathematics

Department Chairman: Richard R. Goldberg
Degrees offered: B.S., M.S., Ph.D.

Undergraduate Program
See "Division of Mathematical Sciences"

Graduate Program

Master’s Programs

To be admitted to candidacy for the M.S. degree in mathematics, a student must have completed work in undergraduate mathematics roughly equivalent to the program previously described for admission to the M.S. degree in mathematics. A student whose preparation does not meet this requirement, in the opinion of his or her initial advisor, may be required to take certain additional courses to cover the deficiency. Recent graduates of the Mathematics master’s programs have found positions both in education (largely secondary school) and industry.

The Department offers the M.S. degree without thesis and the M.S.T. (Master of Arts in Teaching). The M.S. degree may be taken with an education option. For all of these degrees the student is required to take a two-semester sequence in algebra and a two-semester sequence in analysis. A comprehensive examination covers the material in these sequences and, in the case of prospective secondary school teachers, material in required education courses. The remainder of the student’s program may be chosen from any one or more of the departments in the Division and, if desired, from outside the Division as well.

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

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

Program I (designed for secondary school teachers)

Required Courses
Two from 22M.15-16 Introduction to Analysis and 22M.210-211 Analysis, but including either 22M.116 or 22M.211
Two from 22M.120-121 Abstract Algebra and 22M.205-206 Introduction to Algebra, but including either 22M.121 or 22M.206

Two courses in mathematics education

Course Distribution
A minimum of 24 semester hours in the Division of Mathematical Sciences from these courses:
Any course in the Department of Mathematics numbered 100 or above, except 22M.105 Analysis for Applications;
Either 22C.122 Advanced Computer Organization, 22C.132 Programming Languages, 22C.135 Introduction to Computer Theory, 22C.145 Artificial Intelligence, 22C.199 Automata Theory I or any 200-level course in computer science; and
Either 22C.133-134 Introduction to Mathematical Science, 22S.164-165 Introduction to Probability, or any statistics course having any of these as a prerequisite

Comprehensive Examination
A six-hour examination over the required courses will assess the candidate’s knowledge of mathematics and his knowledge of the relevance of specific concepts to the teaching of secondary school mathematics.

Program II

Required Courses
Two from 22M.115-116 Introduction to Analysis I-II and 22M.210-211 Analysis I-II, including either 22M.116 or 22M.211
Two from 22M.120-121 Abstract Algebra I-II and 22M.205-206 Introduction to Algebra I-II, including either 22M.121 or 22M.206

Course Distribution
A minimum of 24 semester hours in the Division of Mathematical Sciences, and a minimum of 18 semester hours in the Department of Mathematics from the courses listed below. Any course in the Department of Mathematics numbered 100 and above except 22M.105
Any of the following courses in the Department of Computer Science:
22C.122 Advanced Computer Organization
22C.123 Programming Languages
22C.135 Introduction to Computer Theory
22C.145 Artificial Intelligence
22C.199 Automata Theory I
or any 200-level course
Any of the following courses in the Department of Statistics:
22S.133-134 Introduction to Mathematical Statistics I-II
22S.164-165 Introduction to Probability I-II
or a course which has any of these as a prerequisite

Comprehensive Examination
This examination (for candidates in Program II) consists of two three-hour examinations over the required courses.
With the permission of the graduate committee, a candidate may substitute an appropriate part of the Ph.D. comprehensive examination for part of the master’s examination.
Admission Requirements

Regular admission to a Master of Arts program requires at least a 2.5 cumulative grade-point on a 4.0 scale. Regular admission to the M.A.T. program requires a 2.7 grade-point average.

Doctoral Programs

Most of the recent graduates of the Ph.D. program have found positions teaching in universities or colleges. Within the Ph.D. program there is ample opportunity to take courses in applicable mathematics, both in the Mathematics Department and other departments in the Division. There is thus no formal Departmental policy distinguishing between pure and applied mathematics, although the Department faculty itself is considerably stronger in the "pure" area.

The Department of Mathematics also cooperates in interdisciplinary doctoral programs with the program in Applied Mathematical Sciences. The requirements for the Ph.D. in mathematics include 72 hours of graduate credit, at least three years of graduate residence, including at least one at The University of Iowa, the passing of a comprehensive qualifying examination as described below. Also, required in the field of research chosen by the candidate are a comprehensive examination in depth, the writing of a thesis and a final examination. Ordinarily, the candidate must demonstrate to the adviser's satisfaction proficiency in French, German or Russian.

The qualifying examination covers three of the areas of algebra, analysis, logic and foundations, and topology. Each student decides in which three of the areas he or she wishes to be examined. The examinations are regularly given twice in each academic year, early October and early April. Further information on these examinations is available in the Mathematics Office.

Beginning graduate students who plan ultimately to work for the Ph.D. should follow the guidelines given above for the various M.S. programs, and should seek their adviser's help in planning a course of study that will prepare them for the comprehensive qualifying examination. Students who enter after having taken some graduate work elsewhere should likewise consult an adviser for an evaluation of the previous work and the planning of further study.


Undergraduate Courses: Lower Division

These courses are not open to graduate students except by special arrangement with chairman of the Department.

326:1 Basic Mathematical Techniques

3 s.h. Fractions and proportions, elementary algebraic expressions and operations, simple products, linear and quadratic equations, simultaneous equations, exponential and radical expressions, one year high school algebra, one year high school geometry

326:2 Mathematical Techniques I

3 s.h. Logarithms, permutations, combinations, roots of polynomial equations, inequalities, programs, complex numbers, primarily intended for students who need
and analyze scientific experiments so that every usable bit of information is squeezed from the data.

**Undergraduate Program**

(See "Division of Mathematical Science")

**Graduate Program**

The graduate program is designed to reflect the dual role of statistics as an independent discipline within the mathematical sciences and as a research tool. The Department offers programs leading to the M.S. degree under both the thesis and nonthesis plans in the fields of theoretical statistics and probability, applied statistics, actuarial science and operations research. Programs leading to the Ph.D. degree are offered in theoretical statistics, probability and applied statistics. The Department of Statistics also cooperates in developing interdisciplinary doctoral programs under the programs in Applied Mathematical Science.

To be admitted to the graduate program, the applicant should have an undergraduate major in one of the mathematical sciences. With the approval of the Department, selected candidates may be granted admittance on the basis of mathematical training through one year of calculus.

**Master's Degree Programs**

Each of the three nonthesis M.S. degree programs offered by the Department requires the successful completion of at least 30 semester hours of graduate work. The required minimum grade-point average for the M.S. degree is 2.5.

The specific course requirements for the three nonthesis M.S. degree programs are given below. If a specified course, or its equivalent, was taken while the student was an undergraduate, an appropriate graduate-level course, selected with the help of the student's advisor, will be substituted in the degree program.

**Theoretical Statistics and Probability**

22M:113 Introduction to Analysis I
22M:153-154 Introduction to Mathematical Statistics I-II
22M:164-165 Introduction to Probability I-II
and at least six semester hours from among:
22M:116 Analysis I-II
22M:210-211 Analysis I-II
22M:160 Applied Statistical Decision Theory
22M:167-168 Introduction to Stochastic Processes I-II
22M:170 Introduction to Nonparametric Statistics
22M:172 Topics in Statistical Methods
22M:223 Probability
22M:257 Apparatus of Mathematics
22M:258 Multivariate Analysis
22M:271-272 Statistical Inference I-II

**Applied Statistics**

The following courses are recommended and constitute the core of the program:
22S:103 Introduction to the Design of Surveys
22S:153-154 Introduction to Mathematical Statistics I-II

22S:158 Design and Analysis of Experiments
22S:162 Regression Analysis
22S:173 Statistical Computation and Computation
22S:100 Applied Statistical Decision Theory
22S:127-128 Statistical Methods in Educational Research I-II
22S:133 Quality Control and Reliability
22S:148 Advanced Statistical Methods
22S:160 Applied Statistical Decision Theory
22S:161 Application of Multivariate Statistical Theory
22S:164 Introduction to Probability I
22S:170 Introduction to Nonparametric Statistics
22M:170 Numerical Methods
56:143 Digital Systems Simulation I
56:241 Operations Research

Other courses relevant to applied statistics, but not appearing on this list, may be selected for inclusion in M.S. program in consultation with advisor.

**Actuarial Science**

22S:153-154 Introduction to Mathematical Statistics I-II
22S:177 Numerical Analysis for Actuaries
22S:178 Graduation
22S:179 Advanced Mathematics of Finance
22S:180 Mathematics of Life Insurance
22S:181-182 Actuarial Theory and Practice I-II
22S:183 Construction of Demographic Tables
22S:184 Risk Theory
22S:297 Seminar: Actuarial Theory

and at least one course from outside Division of Mathematical Sciences, most students elect courses from College of Business Administration

**Operations Research**

22S:153-154 Introduction to Mathematical Statistics I-II
22S:160 Applied Statistical Design Theory
56:241 Operations Research
56:242 Mathematical Programming I

It is also recommended that the following be taken:
22S:167-168 Introduction to Stochastic Processes I-II
56:243 Mathematical Programming II

The M.S. degree may be earned under a thesis program in each of the areas in which a nonthesis M.S. degree may be earned. The course content of such a program would be almost the same as in a nonthesis program except that up to eight semester hours may be earned by writing a thesis. Each candidate for the M.S. degree will have a committee of three members appointed by the chairman of the Department, and one member will be designated chairman of the committee. This committee will have the responsibility of recommending action on the candidate's application for an M.S. degree. This recommendation is usually based on the results of two-hour examinations on the topics covered in the specified courses within each program.
Ph.D. Program

The Ph.D. program in statistics has certain auxiliary objectives, and the Department encourages doctoral students to relate their areas of specialization to the following objectives. The student should have the ability to use electronic digital computing equipment or to learn the language skills needed to read foreign scientific journals and be able to respond in professional contacts with foreign scientists. In order to achieve these objectives, during the first year or two of the program, a doctoral student may wish to take a few courses or seminars to advance his or her understanding of the relationship between statistics and other disciplines, to learn computer programming or to increase facility with one or more foreign languages. Each doctoral student is required to include in the program a component which involves experience in either teaching or statistics consulting.

When a graduate student has accumulated approximately 40 to 50 semester hours of credit, of which at least 18 semester hours are in 200-level courses in the mathematical sciences, that student should request permission to take a preliminary examination for the Ph.D. degree. This examination assesses whether the student has mastered the basic concepts of probability and statistics; it consists of two parts, one of which is mandatory for all prospective candidates. The first part is a basic examination on probability and statistics. Essentially the topics covered are those studied in:

228:153–154 Introduction to Mathematical Statistics 1–II
228:164–165 Introduction to Probability I–II
228:170 Introduction to Nonparametric Statistics

This examination is usually divided into two three-hour sessions. For the second part of the examination the student may choose, according to his or her interests, either II (a) applied statistics (three hours) which basically covers the material in 228:150 Design and Analysis; 228:215 Analysis of Variance, 228:256 Mathematical Statistics (four hours) which covers the material in 228:270–271 Introduction to Mathematical Statistics of Part I (b). This examination is offered once in the fall semester and once in the spring semester. An error examination committee transmits to the Department that the student be passed, passed with reservation or failed. In case of failure, this examination may be repeated once. This examination may be used in lieu of the master’s written examination.

If the student has passed the preliminary examination and obtained a thesis adviser, he or she and the adviser should prepare a plan of study. The student then seeks permission of the Department chairman to take the Ph.D. oral comprehensive examination. This should be held no later than 10 weeks after the preliminary examination and, in no case, more than a year later. The chairmen of the Department will appoint a five-member committee to conduct the examination, at least four of whom must be from the Department of Statistics. The purpose of this examination is to determine whether the student has a sufficient grasp of the necessary mathematical, statistical and probabilistic concepts to work on original problems. Clearly, the student must have the requisite tools which include the major ideas from the preliminary examination, but more than that is expected. For example, a student in applied statistics would be responsible for the mathematical concepts and techniques which are prerequisites for the advanced courses he or she has taken in statistics. Following the examination, the student’s Ph.D. committee will make the usual report to the Graduate College on the Ph.D. comprehensive examination. It is traditional that the doctoral program ends with an oral examination over the student’s dissertation.

Special Features

The development of high-speed electronic computers has had a big impact on statistics. Practicing statisticians and actuaries find the computer an indispensable tool in their daily work. Remote computer terminals are available in MacLean Hall and are employed in Quantitative Methods and several other courses to give students experience using the computer. Because statisticians are often involved with other scientists in research projects, it is important that students gain experience in group efforts. In several courses the Department tries to provide this experience. For example, a team of students, with faculty supervision, recently performed an extensive analysis of the factors relating to highway deaths in Iowa.

Iowa’s Proud Tradition

Professor H. L. Rietz, who served The University of Iowa from 1918 until 1942, was a pioneer in mathematical statistics and actuarial science. Rietz was the first president of the Institute of Mathematical Statistics and served as a special actuarial advisor during the drafting of the original Social Security Act. He and his students have made significant contributions in each of these fields. Today the Department of Statistics carries on a much more varied program than was possible in those early days; however, the commitment to excellence is the same.


Courses Primarily for Undergraduates

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

228:04 Quantitative Methods I 4 a.h.

228:05 Elementary Probability and Statistics 3 a.h.

228:06 Introduction to Probability using SPSS 3 a.h.

228:07 Introduction to Quantitative Methods 3 a.h.

228:08 Elementary Probability and Statistics 3 a.h.

228:09 Probability and Statistics for Engineering and Physical Sciences 3 a.h.

228:255 Two-sample Test of Significance

228:29 Frequency Distributions and Related Topics

228:51 Probability and Statistics for Engineering and Physical Sciences 3 a.h.

228:52 Introduction to Statistical Methods 3 a.h.

228:53 Introduction to Statistical Methods 3 a.h.

228:54 Introduction to Statistical Methods 3 a.h.

228:55 Introduction to Statistical Methods 3 a.h.

228:56 Introduction to Statistical Methods 3 a.h.
Courses for Undergraduates and Graduates

228:011 Biostatistics 3 or 4 h.
Elementary course on statistical methods primarily for research in medical subjects and related fields; same as Preventive Medicine and Environmental Health 63:149.

228:102 Introduction to the Design of Surveys 3 h.
Same as Preventive Medicine and Environmental Health 63:149.

228:135 and 228:136 Probability and Statistics 4 h.
Finite and general probability models, variable variables, functions of random variables, expectation, distribution and continuous distribution functions, estimation and hypothesis testing.

228:137 Statistical Methods in Educational Research I 3 h.
Same as Education 73:149; prerequisite: 228:135.

Same as Education 73:149; prerequisite: 228:137.

228:142 Engineering Statistics 3 or 4 h.
Same as Industrial and Management Engineering 56:122; prerequisite: 228:39 or equivalent.

228:153 Quality Control and Reliability 3 h.
Same as Industrial and Management Engineering 56:133; prerequisite: 228:132.

228:156 Advanced Statistical Methods 3 h.
Same as Education 73:149; prerequisite: 228:39 or equivalent.

228:157 Introduction to Mathematical Statistics I 4 or 5 h.
Basic probability models, distribution of random variables, distribution, estimation, testing hypothesis, sufficient estimates, parameter estimates, Mathematics 228:60 or 228:62.

228:158 Introduction to Mathematical Statistics II 4 or 5 h.
Continuation of 228:157; point estimation, statistical hypotheses, analysis of variance, further normal theory.

228:167 Correlation Methods 3 h.
Same as Education 73:149; Psychology 31:245; prerequisite: 228:140 or 228:141.

228:178 Computational Statistics 3 h.
Modeling of analyses of variance, single factor multiple comparisons, ranking and selection from probability, normal and normal experimental, incomplete block designs, Latin squares and hypercubes, mixed models, balanced and unbalanced designs, generalized linear models, analysis of covariance, sample size as Industrial and Management Engineering 56:231; prerequisite: 228:120, 228:132, 228:134.

228:189 Design of Experiments 3 or 4 h.
Same as Education 73:149; prerequisite: 228:140; offered for three semester hours only in summer session.

228:191 Applied Statistical Decision Theory 3 h.
Same as Industrial and Management Engineering 56:233; prerequisite: 228:120 or 228:132.

228:193 Regression Analysis 3 h.
Same as Education 73:149; prerequisite: 228:132.

228:196 Distribution Free Statistical Methods 3 h.
Same as Education 73:149; prerequisite: 228:143.

228:226 Introduction to Probability Theory 3 h.
Continuous distributions of random variables, convergence of random variables, work and abstract levels of the real number system, Non-Standard Analysis and Axiomatic Set Theory.

228:288 Winter, Spring and Summer terms, graduate courses; statistics of the Poisson process, renewal process and temporary processes; applications selected from physics, biology, and management science; prerequisite: 228:153.

228:289 Introduction to Biostatistical Procedures 3 h.
Continuation of 228:189; Markov chains basis discrete and continuous parameter, with reference to branching processes, random walks, ruin problems, birth and death processes, queuing and traffic models.

228:290 Introduction to Nonparametric Statistical Methods 3 h.
One semester, with an emphasis on interval estimation; two and multiple sample statistics, problems of size, prerequisite: 228:154.

228:291 Statistical Methods in Business Problems selected by instructor for under-graduate level, material in probability and statistics to be used, computational methods; prerequisite: 228:151, 228:153 or 228:154.

228:293 Statistical Computation and Consulting 3 h.
Basic computer for two semester hours study of standard computer programs for data analysis and performing statistical analysis and testing procedures; students enrolled for four semester hours also carry on consulting projects involving statistical problems arising in research projects carried on by University students and faculty member; consulting aspect of course (two semester hours) may be optional, prerequisite of at least instructor.

228:297 Numerical Analysis for Actuaries 3 h.
Introduction to calculus of finite differences, numerical differentiation and integration, solution of nonlinear equations; prerequisite: Mathematics 228:60 or 228:62.

228:176 Graduate Studies 3 h.
Continued study: 228:177, including graphic interpretation, adjusted average, ordinary equations, curve-fitting methods of graduation and methods of testing graduation.

228:177 Advanced Mathematical Methods 3 h.
Composed in summary, annuities certain, bonds, depreciation, sinking funds and the determination of yield rates and principal; prerequisite: Mathematics 228:60 or 228:62.

228:180 Mathematics of Life Insurance 3 h.
Coverage from probability and statistics of finance applied to problems of pension and annuity determination in life insurance; prerequisite: Mathematics 228:60 or 228:62.

228:181 Actuarial Theory and Practice I 4 h.
Mathematical theory of life contingencies of both single and multiple lives, prerequisite or corequisite: 228:119.

228:182 Actuarial Theory and Practice II 4 h.
Continuation of 228:181; development of multiple decrement model and its application to disablement and accidental death insurance and retirement plans.

228:183 Construction of Demographic Tables 3 h.
Construction of life tables, analysis of mortality and morbidity data and elements of demography; prerequisite or corequisite: 228:119 or equivalent.

228:184 Risk Theory 3 h.
Introduction and collective risk models for insurance systems; methods of approximating distributions of the risk theory; management of insurance systems; prerequisite or corequisite: 228:153 and 228:161.

228:185 Topics in Actuarial Science 3 h.
Using topics selected by instructor for reference, basic topics in probability, mathematics, and statistics applied to specific problems; two units in actuarial science; prerequisite or corequisite: 228:181.

228:186 Theoritical Statistics 3 h.

cor. or.

228:187 Readings in Statistics and/or Actuarial Science 3 h.
Prerequisite consent of Department

Courses Primarily for Graduates

228:112 Qualitative Analysis of Statistics 3 h.
Review of topics in matrix theory relevant to statistics, distribution of probability, moment generating function, multivariate normal distribution, prerequisite: 228:154.

228:113 Topics in Statistics 3 h.
Material topics in theoretical statistics of particular interest to instructor; may be repeated for credit, offered for two semester hours only in assuming prerequisite: preliminary knowledge of algebra of matrices and 228:154 or equivalent.

228:206 Analysis of Variance 4 h.
Fixed, mixed and random models, multiple comparisons, general linear model, prerequisite: 228:333.

228:254 Mathematical Statistics 4 h.
Multiple and partial correlation, use of the generalized TV, multivariate linear model, and Maximum likelihood, prerequisite: 228:253.

228:284 Theory of Probability I 4 h.
Advanced classical theory, probability spaces and random variables, distribution and characteristic functions, independence and conditioning, central limit theorems, same as Mathematics 228:352; prerequisite: 228:311.

Statistics 337
Medical Technology

Director: John A. Kepple (VA Hospital), Michael L. O'Connor (University Hospital)

Degree offered: B.A., B.S. (plus certification)

Medical technology is one of the newest and fastest-growing professions in medicine. Medical technologists perform laboratory tests upon which physicians rely for accurate diagnosis and proper treatment of disease. These skilled health team workers are in great demand in hospitals, private and governmental laboratories, clinics, physicians' offices, industrial medical laboratories, pharmaceutical and biological laboratories, and in medical research.

Most medical technologists utilize a battery of complicated precision instruments in their work. Modern-day laboratory tests reveal the presence of abnormalities in blood composition and other body fluids as well as body tissues. Laboratory personnel performing these procedures must have the highly specialized skills acquired in the completion of a formal academic and clinical program.

The medical technology profession requires intelligence, accuracy and reliability in a high degree. As a general rule, students showing an aptitude for scientific subjects in high school will have advantages in medical technology.

Advancement opportunities in medical technology depend to a large extent on the quality of education and the ability of the individual. There is a growing demand for medical technologists with advanced degrees to fill positions in supervision, education and administration.

The University of Iowa offers a program approved by the Council on Medical Education and Hospitals of the American Medical Association and by the Board of Registry of Medical Technologists of the American Society of Clinical Pathologists. The program consists of three years of practical studies followed by a one-year clinical program which may be taken at the University of Iowa Hospitals, the Iowa City Veterans Administration Hospital or, by special arrangement, at another approved hospital school of medical technology.

After successful completion of the four-year program, the graduate is awarded a Bachelor of Science in Arts Degree with a major in general science and medical technology. Also, a Certificate in Medical Technology is granted by the hospital in which the clinical training was conducted. The student is then eligible to take the examination of the Registry of Medical Technologists and thereby become a registered medical technologist, which entitles him or her to the designation M.T. (A.S.C.P.) — Medical Technologist (American Society of Clinical Pathologists).

Predictive studies

In the predictive program, the medical technology student must satisfy the College of Liberal Arts proficiency requirements in rhetoric, physical education, mathematics and foreign language; must satisfy the College of Liberal Arts core requirements in literature, social science and the historical-cultural area; and must earn at least 36 semester hours of credit in science. The credits in science must include 16 semester hours of credit in chemistry, including general chemistry (eight semester hours must be completed during the freshman year), quantitative analysis and organic chemistry; and 16 semester hours in the biological sciences, including zoology, microbiology and parasitology. A course in general physics is strongly recommended but is not required.

To enter a clinical hospital program, the student must have earned at least 96 semester hours of credit in preclinical studies with a minimum 2.0 cumulative grade-point average.

Clinical Program

In the fourth year, students enroll in the 12-month clinical program at the University of Iowa Hospitals or at Iowa City Veterans Administration Hospital. After finishing one of these clinical programs, the University awards 30 semester-hours credit, thus completing the requirements for the Bachelor of Science in Arts degree in general science.

The clinical program covers in depth the following disciplines: clinical hematology, clinical biochemistry, urinalysis, blood banking, clinical microbiology, virology and parasitology. Daily lectures, student laboratory work and rotation through all sections of the clinical pathology laboratories are included.

The Veterans Administration Hospital is approved for 15 students and the program begins in June of each year. University Hospitals is approved for 24 students and accepts a class of 12 students each year and another class of 12 students in the fall of each year.

Because the clinical-year programs of the University of Iowa are limited to a total of 39 students, students may enroll in certain other approved hospital medical technology programs. In such cases, however, prior written approval of the University must be obtained if academic credit towards a bachelor's degree is to be granted upon completion of the clinical program.

Staff: UNIVERSITY HOSPITALS: Professor Routh, associate professor Rose; assistant professors Barrett, Nicholson, M. L.
Microbiology

Department Head: J. R. Porter

Microbiology is a science concerned with the identification, structure and activities of bacteria, yeasts and molds, protozoa, viruses and other organisms of microscopic and submicroscopic size, representing the borderline of life. Microbiology involves study of the distribution of microorganisms in nature, their relationships to each other and to other living things, their beneficial and harmful effects on man, animals and plants, and the physical and chemical changes they produce in the environment.

All branches of the science—general microbiology, food and dairy microbiology, soil microbiology, plant microbiology, water and sewage microbiology, medical and veterinary microbiology, dental microbiology, immunology, pharmaceutical microbiology, marine microbiology, geobiology—have expanded rapidly in recent years and offer rewarding career opportunities to qualified persons.

Microbiology is an excellent major for undergraduate students who want a good general education with emphasis on an important and interesting science. For the graduate of a bachelor's degree program in microbiology, positions are available in government, hospital, public health and industrial control, research and teaching laboratories.

Students who continue beyond the bachelor's degree have career opportunities in these same areas, plus college and university teaching, with greater responsibilities and commensurately higher salaries.

The Bachelor of Science Degree

An undergraduate student majoring in microbiology at Iowa State must meet general College of Liberal Arts requirements in rhetoric, mathematics and physical sciences, in the literature, historical-cultural and social sciences cores, and in a foreign language (German or a related language). A minor in another discipline is required. To earn the Bachelor of Science degree in microbiology, 120 semester hours of credit are required, including 36 semester hours in the major.

Required courses for the microbiology major include:

1. Introduction to Botany
2. 3:7 Principles of Animal Biology
3. 4:1 and 4:4 Principles of Chemistry I–II
4. 4:5 Principles of Chemistry
5. 6:2 Elementary Chemistry Laboratory
6. 4:11 Quantitative Analysis
7. 4:121–122 Organic Chemistry I–II

4:141 Intermediate Chemistry Laboratory I
99:120 Chemistry of Biological Materials
99:121 Chemistry of Biological Materials
29:1–2 College Physics
61:137 General Microbiology
61:138–139 Microbiology
22M:20 Elementary Functions
22M:25–26 Calculus I–II

(*) Optional but recommended, especially for students planning to go on to graduate study

The Honors Program

Open to seniors with grade-point averages of at least 3.0 overall and 3.2 in microbiology courses, the Honors Program in microbiology comprises an introduction to original research, directed readings, participation in a Departmental seminar, the identification and resolution of a special laboratory problem, a report on the laboratory work and an Honors examination. A student successfully completing Honors work receives six semester hours of credit and is awarded the bachelor's degree "with Honors."

For graduate programs, facilities, staff roster and course descriptions, see "College of Medicine."

Museum Training

Department Head: George D. Schlimper

The Department offers courses which give the student a comprehensive background in the conceptual, design and production phases of exhibit preparation and the general operational procedures of small science museums. Courses are offered during the summer session as well as the regular academic year. They are elective college work counting as credit toward the B.A. or B.S. degree. As graduate work, museum courses may be credited as a minor on a master's degree or Ph.D. A major in general science or science education is recommended for students preparing for professional museum careers.

Techniques presented in the Museum Laboratory are of value not only to those intending to pursue museum careers, but also to preservice, geology, zoology and anthropology students. Instruction is designed to meet the individual needs of each of these students. Advanced museum students are afforded the opportunity to gain practical working experience by participating directly in the Museum of Natural History exhibit program. The museum itself is expanding rapidly, and graduates of the University occupy positions of responsibility as directors, curators and exhibit specialists in museums throughout the United States and Canada.

Staff: curator and instructor Schlimper

Courses

36:91 Museum Techniques

Collecting, preparing and exhibiting biological materials for museums, classroom teaching or repository use
Music

School Dean: Milton Yeoman


A primary element in a fine arts community of international repute, The University of Iowa School of Music has long been recognized as one of the excellent university-based schools of music in the United States.

The School's on-campus enrollment of 250 undergraduate and 175 graduate students majoring in music is at once large enough to sustain strong programs in all areas of specialization and small enough to ensure the individual attention essential to each student's development.

Approximately 90 percent of the School's undergraduate students earn certification to teach. Most of those who earn certification do enter teaching.

More than 70 graduates of the School have become heads of music at other colleges and universities.

In teaching, graduates of the School generally have found opportunities to continue top-rung interests in performing, composing and other related activities.

There is also a growing demand for qualified personnel in sales and marketing for music programs and other areas of the music industry, and in church music, music librarianship, and recording and broadcasting.

Alumni of the School play in major orchestras in Boston, Dallas, Cincinnati, Minneapolis and New Orleans, and in numerous other professional organizations.

The University of Iowa School of Music is a charter member of the National Association of the Schools of Music.

At the undergraduate level, School of Music curricula offer all qualified high school graduates an opportunity for further study of music, either professional or avocational. At the graduate level, curricula provide advanced study, designed primarily for persons preparing for teaching careers in secondary schools or colleges and universities.

All music enrollments require School of Music approval.

Undergraduate Degrees

New undergraduate students planning to major in music are expected to audition either in person or by tape recording in advance of registration; write to the director of the School of Music for details. In addition, all transfer students must take the Advisory Examination in music theory (see "Graduate Degree").

Curricula for the two undergraduate degrees are identical, except that candidates for the B.M. may not count more than 50 semester hours in music toward the 126 semester hours required for graduation in the College of Liberal Arts, while candidates for the B.M. may count more than 50 semester hours in music toward graduation in the College of Liberal Arts and, in addition, need only eight semester hours of credit in foreign language. Students who want a teaching certificate may select either degree, but the B.M. is preferred since the B.M. program allows the student to take more coursework in music.

Candidates for either degree must complete these music requirements:

25:1-2 Literature and Theory I, II
25:3-4 Ear Training and Sight Singing
25:5-6 Literature and Theory III, IV
25:7-8 Advanced Ear Training and Sight Singing

Four years of applied music (both solo and ensemble)

Participation in band, orchestra or chorus required of all undergraduates; specific assignments at discretion of adviser and director of School of Music; as a minimum, wind and percussion majors must participate in band program during first two years in residence at the University, female students in concert band and male students in both marching and concert band; requests for adjustment of rules pertaining to performance in band may be submitted to reviewing committee.

Advanced electives in applied music, theory, composition, music education, music history and literature, or orchestration and conducting.

Undergraduate Music Education Programs

For general requirements for teacher certification, see "College of Education"

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

25:106 Instrumental Techniques (Cornet, Clarinet and Percussion) 1 or 2 s.h.
25:105 Instrumental Techniques 1, 2 or 3 s.h.
25:106 Instrumental Techniques 1, 2 or 3 s.h.
25:107 Instrumental Conducting 2 s.h.

All brass, woodwind and percussion majors in music education must participate in concert band for eight semesters; men must also participate in marching band for four full semesters.

String Majors

25:101 Class Viola

25:104 Instrumental Techniques (Cello, Viola and Percussion) 0 to 2 s.h.

Minimum of one year on secondary string instrument (required); viola and viola majors elect one year of cello instruction; cello...
and bass majors elect one year of violin; in addition, all violin majors are expected to elect one semester of Class Viola.

25:107 Instrumental Conducting 2 s.h.
25:112 String Techniques and Methods 3 s.h.

Vocal and Piano Majors
Vocal majors must evidence satisfactory competence in piano; piano majors must evidence satisfactory competence in voice; either vocal or piano majors lacking such proficiency to continue applied music in appropriate area.

25:109 Choral Methods and Conducting 3 s.h.
25:110 Choral Literature and Conducting 3 s.h.

Music-Teaching Minor for Elementary Education Majors
Minimum of 24 semester hours required in this program

Required Courses

7E:119 Methods: Basic Skills and Techniques in Music Education 3 s.h.
7E:120 Methods and Materials: Music for the Classroom Teacher (section for music majors) 3 s.h.
7E:192 Laboratory Practice in Elementary School 2 s.h.
Applied Music 2 s.h.
Participation in Music Ensembles 2 s.h.

Electives
Minimum of 12 semester hours to be selected from other music and advanced music education courses (7E and 7F course designations) with approval of adviser.

25:115 Dictation for Singers I 2 s.h.
25:116 Dictation for Singers II 2 s.h.

Piano Majors-Nonscalar Area
Piano majors who elect to teach in nonscalar area must complete requirements in either brass, woodwind, and percussion or string area.

Methods and Materials: Student Teaching
Vocal Majors

7E:145 Methods and Materials: Elementary School Music 3 s.h.
7F:142 Methods and Materials: Secondary School General Music 3 s.h.

Instrumental Majors

7E:145 Methods and Materials: Elementary School Music 3 s.h.
7F:146 Methods and Materials: Secondary School Instrumental Music 4 s.h.

All Majors

7B:191 Observation and Laboratory Practice in High School 3 s.h.
7E:192 Laboratory Practice in Elementary School 6 s.h.

(See "College of Education" for education course requirements)

Graduate Degrees
Each applicant must meet the general requirements for admission to the Graduate College (see "Graduate College").

Music-Teaching Minor for Elementary Education Majors
Minimum of 24 semester hours required in this program

Required Courses

7E:119 Methods: Basic Skills and Techniques in Music Education 3 s.h.
7E:120 Methods and Materials: Music for the Classroom Teacher (section for music majors) 3 s.h.
7E:192 Laboratory Practice in Elementary School 2 s.h.
Applied Music 2 s.h.
Participation in Music Ensembles 2 s.h.

Electives
Minimum of 12 semester hours to be selected from other music and advanced music education courses (7E and 7F course designations) with approval of adviser.

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7F:142 Methods and Materials: Secondary School General Music 3 s.h.

Instrumental Majors

7E:145 Methods and Materials: Elementary School Music 3 s.h.
7F:146 Methods and Materials: Secondary School Instrumental Music 4 s.h.

All Majors

7B:191 Observation and Laboratory Practice in High School 3 s.h.
7E:192 Laboratory Practice in Elementary School 6 s.h.

(See "College of Education" for education course requirements)

Graduate Degrees
Each applicant must meet the general requirements for admission to the Graduate College (see "Graduate College").

The Graduate College requires a minimum of 30 semester hours of graduate credit, including at least 24 semester hours completed in residence. As soon as possible in the first semester of residence, the candidate should select a field of special interest and consult with the area head in that field who will act as his or her adviser. A plan of study approved by the adviser and the Departmental executive must be filed with the Graduate College during the semester in which the degree is to be granted. After or in the semester in which he or she expects to complete them, the candidate must present himself or herself for a final master’s examination. This examination normally covers the areas of music theory, music history and the major area of concentration.

Regulations of the Graduate College provide that, upon recommendations of the School of Music, students who are going on to the doctorate may substitute the comprehensive Ph.D. examination for the final master’s examination. In such cases it is expected that the student’s coursework be of high quality and sufficiently advanced to merit this recommendation.

Areas of concentration for M.A. degrees are composition, music history and musicology, music education, music literature, music theory and performance (including conducting). The requirements for the thesis and nonthesis programs are identical, except that under the thesis plan up to eight semester hours may be earned for the thesis. Theses are normally required in all areas except music education and math. If the usual master’s degree is completed in eight semester hours maximum degree credit allowed, one full-length recital is required; degree credit will not be given for a recital graded lower than B. It is expected that original compositions shall be sufficiently tested by audition before being submitted at this time. All curricula for the Master of Arts degree include:

25:321 Introduction to Graduate Study in Music

Any two of the following, to be taken only after any serious deficiency revealed in advisory examinations in music theory and ear training are remedied through 25:111 Review Theory:

25:145 Comprehensive Forms or satisfactory score on Advisory Examination
25:147 Final Forms or satisfactory score on Advisory Examination

One elective from analytical studies sequence (25:148-153) or equivalent

If waived from either 25:145 or 25:147 as a result of the Advisory Examination, student must take one from which
be or she was not excused, and an elective from analytical studies series; if excused from both 25:145 and 25:147, only elective from analytical studies need be taken.

25:301–2 Advanced History and Literature of Music I–II or equivalent or satisfactory score on Advisory Examination. If excused from either or both 25:301–2 as result of Advisory Examination, another course should be elected from music history sequence 25:303 to 25:319; courses 25:322 and 25:320 to 25:332; others occasionally offered by musicology staff may be elected in special cases with permission of musicology adviser.


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

Suitable courses in candidate's areas of concentration

Graduate programs for the M.A. in music education include all minimum requirements of the School of Music (see above), as well as 78:240 Supervision and Administration of Music, 78:441 Psychology of Teaching Music, 78:245 General Music in the Elementary School or 78:341 General Music in Secondary Schools, and two courses selected from the following:

25:108 Advanced Instrumental Conducting
25:172 String Instrument Literature
25:207 Advanced Choral Conducting I
25:208 Advanced Choral Conducting II
25:209 Advanced Instrumental Methods and Literature I
25:310 Advanced Instrumental Methods and Literature II
25:341 Advanced Choral Literature I
25:342 Advanced Choral Literature II
25:343 Advanced Choral Literature III

Master of Fine Arts

The M.F.A. is a degree normally requiring two years for students of superior ability in the areas of composition or performance (including conducting). It requires a minimum of 48 postbaccalaureate semester hours. In addition to the curricular requirements for the Master of Arts degree (see above), the student must also present at least two full-length recitals or programs. A Master of Arts degree may be earned while the student is working toward the Master of Fine Arts degree; but the student must meet all requirements for degree separately, including two final examinations, with a minimum combined total of 60 semester hours of graduate credit (see "Graduate College").

Doctoral Degrees

The Graduate College requires a minimum of 72 semester hours of graduate credit for the doctorate; two semesters of at least nine semester hours each must be spent in full-time residence on campus at the University beyond the first 24 semester hours of graduate work. As soon as possible in the first semester of his or her residence, the candidate should consult with the head of the area of his or her field of interest for preliminary planning. A formal plan of study must be drawn up no later than the semester in which the comprehensive examination is to be taken, and a copy of the plan must be sent along with the Departmental request to the Graduate College for permission to take the examination. The comprehensive examination is intended to evaluate the candidate's knowledge of music theory, music history and his or her major area of or near the end of the formal preparation and prior to the completion of the dissertation. The student must be registered in the University at the time of the comprehensive examination, which must be passed not later than the session before the session of graduation. The examination may not be taken until the foreign language or other tool requirements (see below) set by the student's supervisor have been satisfied. The final examination, an oral defense of the dissertation, may not be held until the next session after passing the comprehensive examination (see "Graduate College" for further details).

All doctoral study in music includes:

- Minimum course requirements listed under the M.A. degree.
- One or more additional electives from the analytical studies sequence 25:148–152 or equivalent.
- One or more additional courses in the music history-musicology sequence (see Master's Degrees);
- 25:179 Acoustics or equivalent;
- Reading proficiency in one foreign language (usually German) except for music education students, who may elect two courses in statistics; most areas require one or more additional languages for these further language requirements and levels of achievement expected, students should consult appropriate adviser; it is recommended that entering students register for a language continuously, unless or until they pass required proficiency examination;


Doctor of Philosophy

Areas of concentration for this degree include composition, music history and musicology, music theory, and music literature. This designation is used for programs degree with a major emphasis in choral or instrumental literature, and for programs combining emphasis in more than one area, such as musicology and opera production; theory and organ literature, etc.). It is expected that original composition shall be tested by audition before being submitted as theses.

Admission to the Ph.D. program in music theory includes the following requirements: satisfactory achievement on the advisory examinations in music theory; demonstration of minimal piano proficiency; submission of a qualifying research paper; and satisfactory achievement on a qualifying examination. Details of these requirements may be obtained from the director's office, School of Music.

Basic requirements for Ph.D. programs in music education
Music

Music

include, in addition to the requirements for the M.A. in this field, two semester hours credit in both 78-444 and 78-445, and a minimum of eight semester hours in education. Additional course requirements in music and music education will be determined on the basis of the individual professional needs of each student. Admission to the Ph.D. program in music education is based upon a satisfactory score on the Graduate Record Examination, demonstration of adequate musicianship, holding or qualified for a valid teaching certificate and evidence of successful teaching experience.

Doctor of Musical Arts

For the D.M.A. degree in performance and pedagogy, the candidate must meet all the general requirements for the Ph.D. in music with respect to residence, language requirements, total minimum hours, and written and oral comprehensive examination. Instrumentalists and vocalists must offer satisfactory evidence of ability in their field of performance by means of an audition, preferably before their first registration or at the latest during the first semester in residence. Conductors shall provide evidence of previous successful professional experience and be auditions before or during their first semester in residence before being admitted to the D.M.A. program.

The D.M.A. dissertation is the presentation of three full-length recitals in two recitals plus the performance of a concert with orchestra or other appropriate ensemble. Vocalists may substitute the execution of one or more major roles in a large-scale work, e.g., opera or oratorio, for one of their recitals. Conductors will present three programs. D.M.A. candidate must give evidence of their ability to make a scholarly investigation of limited scope by means of a written essay. For further particulars concerning the Ph.D. and D.M.A. degrees in specific fields, the student should consult the director of the School of Music.

Graduate Awards

Qualified graduate students are invited to apply for fellowships and assistantships. Inquiries should be directed to the School of Music.

Music for Nonmajors

Students for whom music is an avocation rather than a vocation will find courses 25:159 Late 18th and 19th Century Composers, 25:160 Early 18th and 20th Century Composers or core courses 11:39-40 of interest in acquainting them with music as listeners, and they should consult music advisors regarding such courses in applied music (solo and ensemble) as may appeal to them at some later time. With the Dean's approval, those with an elementary background in music may register for 25:1-2 Fundamentals and Harmony I-IL 25:91-92 History of Music I-IL and 25:161 Survey of Opera. Full elective credit for all music courses is available in the College of Liberal Arts for the general student as well as the prospective professional.

Private Lessons

The only special fees in music at Iowa are for private lessons. Semester rates for majors are currently $30.00 for weekly one-hour lessons in the student's major area and $25.00 for weekly half-hour lessons in the secondary area; and for nonmajors, $25.00 for a weekly half-hour lesson.

Opportunities for Performance

The School of Music faculty comprises highly-trained artist-teachers in each area of specialization. Private lessons are offered in all band and orchestra instruments, voice, piano and organ. Frequent recital appearances, including the required senior solo recital, help the student develop technical competence and poise. Participation in a variety of ensembles provides additional valuable training and experience.

All undergraduate students in music must participate in band, orchestra or chorus; wind and percussion majors must participate in band during their first two years at the University.

The University Symphony presents five concerts each year and performs with the University Chorus in Christmas and spring concerts.

The Chamber Orchestra performs the classical repertoire and the contemporary scores of student composers, accompanies student-performed concerts and some operatic productions and serves the practical needs of aspiring conductors. College Musician (Instrumental) performs old and unusual music on old and unusual instruments.

The Symphony Band presents concerts on campus and on tour.

The Hawkeye Marching Band appears at all home football games and at one out-of-town game each fall.

The Hawkeye Concert Band presents concerts on campus and forms the nucleus of the basketball pep and ROTC parade bands.

Jazz Workshop/Stage Bands provide opportunities to study and perform various jazz styles, phrasings and concepts.

The Percussion Ensemble gives performances of the opportunity to gain extensive experience in all facets of percussion performance.

The University Chorale, comprising 45 voices, performs a repertoire including sacred and secular compositions from all periods, folk songs, spirituals and cantatas. In addition to campus appearances, it makes an annual tour.

Opera Workshop gives students ample opportunity to gain practical experience in the production and performance of operas. The year's activities range from single scenes to full-scale productions.

Oratorio Chorus specializes in the performance of choral-orchestral masterworks of the eighteenth, nineteenth and twentieth centuries. Major performances are the annual Christmas and spring concerts with the University Symphony Orchestra.

College Musician (Vocal) is a small group which performs difficult and interesting choral music of all areas.

The Center for New Music was established with a Rockefeller Foundation grant to provide an environment for innovative composition and a vehicle for the performance of new works. Its repertoire includes the works of little-known young composers and works using electronic sounds, as well as compositions by recognized modern composers.

The Center for the New Performing Arts, first facility of its kind to be funded by the Rockefeller Foundation, is an interdisciplinary unit linking the University's schools of Music and Art and its film, dance, theater and creative writing areas. The Cen-
ter's basic purpose is to encourage talented young artists to
develop their creative skills through multimedia and inter-media
classes, projects and performances.

Facilities
With completion of the new Music Building (1970) and its anechoic
Hancher Auditorium (1972), the University of Iowa Center for
the Arts has one of the nation's finest facilities for teaching
and performance in music. In addition to class and seminar rooms,
the Music Building includes 55 teaching studios, 73 prac-
tice rooms, a large library, an electronic music laboratory, com-
pletely soundproof car training and listening facilities, three
chorus and orchestra rehearsal halls, ample solo and ensemble
practice facilities, seven practice and recital organs and a 720-
seat recital hall. Hancher Auditorium seats 2,600 persons for
concerts, 2,400 for opera and unit drama production. The library
resources include more than 40,000 volumes of music
and books — increased at the rate of approximately 2,000 a
year — and more than 1,200 reels of microfilm, a microcard file
of approximately 300 titles nearly 5,000 LP records and 150
periodicals in several languages. Its acquisition program gives
particular attention to a strong reference collection, emphasizing
the "bread and butter" resources of musical research and per-
formance. The chorus's quarters in the new Music Building
provide 24 study carrels, a microreader room, a seminar and
two books rooms, a large reading area with 50 listening posts and
the separate area for the Goldwin Band Library, one of the world's
most famous collections of band music.

Staff: professor Anderson, Dixon, Donang, Hering, Kraf, Luper,
Maeg Obrecht, Olness, Perant, Scholz, Simms, Stark,
Tait, Voigt, associate professors Amado, Atkins, Avery,
Ayres, Biege, Glass, Grace, Davis, Eckert, Farnell, Oram,
Ham, Henry, Hoebler, Hill, Jensen, Kottich, Leccone, Mert-
man, Pfeiffer, Podhajski, Tyve, Wende; instructor professors
Biesch, Dietrichson, Lakin, Lewis, instructor Lesnich, associate
in performance Duckwall, Beshe, Persons, J. Purmouth,
P. Purmouth, Rosselli, West.

Courses Primary for Undergraduates

<table>
<thead>
<tr>
<th>Theory and Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>2561 Literature and Theory I</td>
</tr>
<tr>
<td>History, writing, and the development of music and musical thought from</td>
</tr>
<tr>
<td>ancient times to the 18th century in prose. May be accompanied by</td>
</tr>
<tr>
<td>registration in 2562, first semester</td>
</tr>
<tr>
<td>2562 Literature and Theory II</td>
</tr>
<tr>
<td>Continuation of 2561; must be accompanied by registration in 2562; second</td>
</tr>
<tr>
<td>semester</td>
</tr>
<tr>
<td>2563 Literature and Theory III</td>
</tr>
<tr>
<td>History, composition, and formal practices from the 18th century to</td>
</tr>
<tr>
<td>the present. May be accompanied by registration in 2563, second</td>
</tr>
<tr>
<td>semester</td>
</tr>
<tr>
<td>2564 Literature and Theory IV</td>
</tr>
<tr>
<td>Continuation of 2563; may be accompanied by registration in 2564, second</td>
</tr>
<tr>
<td>semester</td>
</tr>
<tr>
<td>2567 Advanced Ear Training and Sight Singing</td>
</tr>
<tr>
<td>Two laboratory periods per week; both semesters</td>
</tr>
<tr>
<td>2568 Advanced Ear Training and Sight Singing</td>
</tr>
<tr>
<td>Continuation of 2567; both semesters</td>
</tr>
<tr>
<td>2569 Advanced Ear Training and Sight Singing</td>
</tr>
<tr>
<td>Continuation of 2568; both semesters</td>
</tr>
<tr>
<td>2561 Review Theory</td>
</tr>
<tr>
<td>Note: may be repeated; both semesters and summer</td>
</tr>
<tr>
<td>2565 Undergraduate Composition</td>
</tr>
<tr>
<td>Prerequisite: permission of instructor; both semesters</td>
</tr>
</tbody>
</table>

History and Research

2561 History of Music I | 3 s.h. |
Prerequisite: music majors 255 or equivalent; nonmusic, consent of |
instructor; first semester |
2562 History of Music II | 3 s.h. |
Continuation of 2561; may be taken as independent study; prerequisite |
same as 2561; may be repeated; first semester |
2567 Research in Music | 1 to 4 s.h. |
May be repeated for credit

Courses for Undergraduates and Graduates

Music Education

Where dual minors are listed, subjects preparing for a Music Teacher Certifi-
icate should register under Education number.

25100 Class Voice | 1 s.h. |
Open to music majors for secondary music education; by permission |
open to others |
25112 Class Piano | 1 s.h. |
Open only to music majors for secondary piano ability |
25102 Class Piano II | 0 to 3 s.h. |
Open only to music majors for secondary piano ability |
25505 Class Viola | 1 s.h. |
Open only to music majors for secondary string study |
25045 Instrumental Techniques (Cornet, Clarinet, |
Percussion) | 1 or 2 s.h. |
25055 Instrumental Techniques | 1 to 2 s.h. |
Same as Education 154, for prospective teachers in public schools; fundamen-
tal instrument skills and semester |
25045 Instrumental Techniques | 1 to 2 s.h. |
Same as Education 154, continuation of 2505, second semester |
25174 Instrumental Conducting | 2 s.h. |
Offered both semesters |
25174 Advanced Instrumental Conducting | 2 s.h. |
Permits advanced study in conducting |
25177 Orchestra Methods and Conducting | 2 s.h. |
Same as Education 271, first semester |
25178 Orchestra Literature and Conducting | 2 s.h. |
Same as Education 271, continuation of 2517, may repeat 2518, second |
semester |
25179 Wind Ensemble Conducting | 2 s.h. |
Same as 25179 or 25181, but without discussions of |
orchestral conducting |
25182 Techniques and Methods | 2 or 3 s.h. |
Same as Education 271 |
25183 Method of Teaching Piano | 2 s.h. |
Same as Education 271, Laboratory |
25184 English for Singers I | 2 s.h. |
25185 English for Singers II | 2 s.h. |
25187 Problems in Arranging and Orchestration | cr. arr. |
25195 Arranging for Marching Band | cr. arr. |
25174 Seminar: Percussion Methods, Materials, |
Performance Practices | 1 or 2 s.h. |
Prerequisites: consent of instructor; contemporary percussion literature and current |
styles, formats, techniques or performance and composition |

Theory and Composition

25149 Counterpoint and Forms | 3 s.h. |
Writing and analyzing counterpoint; 255 or 257 or equivalent |
25148 20th-Century Harmony and Counterpoint | 3 s.h. |
Lectures and writing; 255 or 257 or equivalent; first semester |
25147 Tonal Forms | 2 s.h. |
Prerequisite: 255 or 257 or equivalent; both semesters and semester |
25148 Analysis of Music Literature, 1900 to 1970 | 3 s.h. |
Prerequisite: 251 or 255 or equivalent; may be repeated; first semester |
25149 Analysis of Music Literature, 1750 to 1850 | 3 s.h. |
Prerequisite: 251 or 255 or equivalent; may be repeated; first semester
### Music

#### 25:150 Analysis of Music Literature, 1825 to 1900  
3 s.h.  
Prerequisite: 25:11 or equivalent and 25:5 or equivalent; may be repeated; second semester.

#### 25:151 Analysis of Music Literature, 1900 to Present  
3 s.h.  
Prerequisite: 25:11 or equivalent and 25:5 or equivalent; may be repeated; second semester.

#### 25:152 Analysis of Music Literature, Special Topics  
S. arr.  
Course content chosen by instructor.

#### 25:154 Intermediate  
3 s.h.  
Same as 15:102, Spring Semester.

#### 25:156 Studies in Jazz  
S. arr.  
Prerequisite: thorough knowledge of traditional harmony and counterpoint and at least junior standing.

#### 25:166 Composition Seminar  
Prerequisite: advanced standing and permission of instructor.

#### 25:175 Orchestra  
2 s.h.  

#### 25:177 Thorough-Base Realization I  
2 s.h.  
Practice in writing keyboard assignments in seventeenth- and eighteenth-century music.

#### 25:178 Thorough-Base Realization II  
2 s.h.  
Practice in improving keyboard assignments as light on figured bass; open to qualified students with sufficient keyboard proficiency.

#### History, Literature and Research

- **25:130 Colloquium**  
  0 or 1 s.h.  
  A seminar approach to special problems; letters and discussions.

- **25:140 Early 16th- and 17th-Century Composers**  
  3 or 5 s.h.  

- **25:141 Early 16th- and 17th-Century Sources**  
  S. arr.  
  Historical study of operatic literature, first semester and summer.

- **25:142 Interpretation of German Art Song**  
  S. arr.  

- **25:143 Interpretation of Russian Art Song**  
  S. arr.  

- **25:145 Theory of Organ Building and Design**  
  S. arr.  
  Development of organ building, history of action and of pumps. Resistance to pressure; open to graduate students and to others by consent of instructor, may be repeated for credit; offered alternate years; offered 1970-71.

- **25:146 Church Service Playing I**  
  2 s.h.  
  Service and hymn playing; accomplishment of chants and choral music, and interpretation of short two- and three-part hymn introductions, may be repeated for credit; offered alternate years; offered 1970-71.

- **25:147 Church Service Playing II**  
  2 s.h.  
  Continuation of 25:146; may be repeated for credit; offered alternate years.

- **25:148 Literature I**  
  1 s.h.  
  Pre-Bach Versets from Lutheran through seventeenth century; open to all graduate students and to others by consent of instructor.

- **25:149 Literature II**  
  2 s.h.  
  Organ works of Bach and his contemporaries; literature of eighteenth and early nineteenth centuries, open to all graduate music students and to others by consent of instructor; may be repeated for credit.

- **25:150 Organ Literature I**  
  S. arr.  

- **25:151 Organ Literature II**  
  S. arr.  

- **25:152 Organ Literature III**  
  S. arr.  

- **25:153 Special Studies**  
  S. arr.  

- **25:155 Pedagogy**  
  2 s.h.  

- **25:156 Study of principles of organ teaching through examination of methods and literature of famous organists. Intermediate and advanced levels; offered alternate years in spring semester.

### Courses Primarily for Graduates

#### Music Education

- **25:166 Seminar: Contemporary Issues in Music Education**  
  2 s.h.  
  Taught in Fall semester.

- **25:167 Senior Problems**  
  S. arr.  

- **25:201 Methods of Teaching Voice**  
  S. arr.  

- **25:202 Seminar: Advanced Research**  
  S. arr.  

#### Musicology, Literature and Negroes

- **25:201 Advanced History and Literature of Music I**  
  3 s.h.  
  In Western music; first semester.

- **25:202 Advanced History and Literature of Music II**  
  3 s.h.  
  May be taken as independent unit with permission of instructor.

- **25:203 Medieval Music**  
  3 s.h.  

- **25:204 Renaissance Music**  
  3 s.h.  

- **25:205 17th-Century Music**  
  3 s.h.  

- **25:206 The Age of Bach and Handel**  
  3 s.h.  

- **25:207 The Classical Period**  
  3 s.h.  

- **25:208 Romantic Music**  
  3 s.h.  

- **25:209 20th-Century Music**  
  3 s.h.  

- **25:210 Music of the Americas Latin America**  
  3 s.h.  

- **25:211 Music of Latin America**  
  3 s.h.  

- **25:214 Seminar: Genres of Music**  
  3 s.h.  

- **25:222 Seminar: Medieval Harpsichord and Keyboard Instruments**  
  3 s.h.  

- **25:225 Organ Pedagogy**  
  2 s.h.  

#### Principles of Construction and Maintenance of Historical Instruments

- **25:226 Aesthetics, teaching, maintenance and repair of historical instruments**  
  3 s.h.  

- **25:227 Organ Pedagogy**  
  3 s.h.  

- **25:228 Organ Pedagogy**  
  3 s.h.  

#### Theory and Composition

- **25:229 Pupae**  
  3 s.h.  
  Prerequisite: 25:228, writing and analysis; second semester.

- **25:230 Practice Teaching in Theory**  
  S. arr.  

- **25:231 Methods of Teaching Theory**  
  S. arr.  

- **25:232 Methods and Techniques of Teaching Music**  
  S. arr.  
  Techniques for teaching basic theory skills: interval, rhythm, melody, harmonic dictation and selected keyboard skills.

- **25:237 Seminar: Theory Research**  
  S. arr.  

- **25:241 History of Music Theory I**  
  2 s.h.  

- **25:243 History of Music Theory II**  
  2 s.h.  

- **25:249 Computer Studio**  
  S. arr.  
  Nature, use and role of equipment in electronic music studio; prerequisites: eelectronic music and consent of instructor; first semester.

- **25:251 Electronic Studio II**  
  S. arr.  
  Individual creative studies, prerequisites: 25:130 or consent of instructor; may be repeated for credit; both semesters.

- **25:263 Advanced Theory I**  
  3 s.h.  
  Examination and evaluation of ideas of such theorists as Rameau, Fux, Willibald Fischer, Schenker, Bart, Pichl, developing bases for analysis.

- **25:264 Analytical Procedures**  
  3 s.h.  
  Problems of musical perception, examination of basic principles pertaining to music architecture, such as those of Leibniz, Meyer, Casel, Leh-Rowe.
Music

25:321 Introduction to Graduate Study in Music 2 a.h.
Use of the music library; research problems; life style at the University; selection of a major field of concentration. 6 a.h. credit required.

Preparation of advanced bibliography; survey of major library resources; style analysis and critique; use of major bibliographies and data bases; study of specific topics in groups and by individuals; research paper; 4 a.h. credit required.

25:331 Performance Practice I: Medieval and Renaissance Music 2 a.h.
Problems of interpretation in early music. 3 a.h.

25:333 Performance Practice II: 17th- and 18th-Century Music 3 a.h.
Interpretive aspects of music of Baroque and Classical periods. 3 a.h.

25:335 Seminar: Wind Instrument Performance or arr.
Current problems of performance practice of wind instruments. 3 a.h.

25:367 Music Research and the Computer 5 a.h.
Current applications of high-speed digital computers to research in musicology, history and music theory. 5 a.h.

25:369 Seminar: Operatic Literature or arr.
A study of the most important operatic scores from standpoint of performance. 5 a.h.

Manner of render and technical literature from Renaissance through nineteenth century; alternate sessions. 5 a.h.

25:342 Advanced Choral Literature II 5 a.h.
Composers, orchestral and piano literature from Renaissance through twentieth century; alternate sessions. 5 a.h.

25:343 Advanced Choral Literature III 5 a.h.
Twentieth-century choral music; alternate sessions. 5 a.h.

25:344 Seminar; Choral Music or arr.

25:351 Survey of Song Literature I 2 a.h.
Ten songs before Schubert; alternate sessions. 2 a.h.

25:352 Survey of Song Literature II 2 a.h.
Twelve songs beyond Schubert; alternate sessions. 2 a.h.

25:353 Seminar; Survey of Song Literature I or arr.

25:354 Seminar; Survey of Song Literature II or arr.

25:361 Special Moments Literature Seminar or arr.
Individual research in special aspects of piano literature; priority for D.M.A. students. 2 a.h.

25:363 Readings in Music Theory or arr.

25:365 Readings in Music History or arr.

25:366 Thesis or arr.

25:400 Thesis (M.A.) or arr.

25:401 Thesis (M.F.A.) or arr.

25:500 Thesis (Ph.D.) or arr.

25:501 Composition (Ph.D. Thesis) or arr.


25:503 D.M.A. Recital or arr.

Music Education

See "College of Education" for course descriptions.

75:110 Methods: Basic Skills and Techniques in Music Education 3 s.h.

75:120 Methods and Materials: Music for the Classroom 3 s.h.

75:145 Methods and Materials: Elementary School Music 3 s.h.

75:182 Music Workshop for Classroom Teachers or arr.

75:183 Elementary Music Teachers 2 a.h. or arr.

75:185 Laboratory Practice in Elementary Music 2 a.h.

75:241 General Music in the Elementary School 2 a.h.

75:140 Methods and Materials: Secondary School Instrumental Music 4 s.h.

75:120 Methods and Materials: Music for the Classroom 3 s.h.

75:181 Observation and Laboratory Practicum for Graduate Students 2 a.h.

75:100 Observation and Administration of Music 3 a.h.

75:331 Music Education Workshop: Instrumental Methods 2 a.h.

75:341 General Music in Secondary Schools 3 a.h.

75:363 Special Studio: Music Education 3 a.h.


75:441 Psychology of Teaching Music 2 a.h.

75:442 Music Education, Advanced Observation and Laboratory Practice 2 a.h.

75:443 Measurement and Evaluation in Music 2 a.h.

75:444 Research in Music Education 2 a.h.

75:415 Sociological and Psychological Factors in Music Education 2 a.h.

Applied Music

For 500.00 per semester charged for each course in applied music in student's major field of performance; course must be of either individual or ensemble of individual and class lessons (minimum of one hour weekly) at option of instructor; students desiring two (500.00) courses in one semester must pay fee of 1000.00; all music majors are expected to attend several of applied music courses for which they enroll. Selection of applied music options available in first and second semesters (first set is second semester) to talented students who require all for performance, with written permission of director.

75:31 Voice I or arr.

75:32 Violin I or arr.

75:33 Organ I or arr.

75:34 Harp I or arr.

75:35 Viola I or arr.

75:36 Cello I or arr.

75:37 Trombone I or arr.

75:38 Trombone II or arr.

75:39 Piano I or arr.

75:41 Woodwind I or arr.

75:42 Woodwind II or arr.

75:43 Percussion I or arr.

75:44 Violin II or arr.

75:45 Piano II or arr.

75:46 Trumpet I or arr.

75:47 Trumpet II or arr.

75:48 String Bass I or arr.

75:49 Double Bass I or arr.

75:50 Double Bass II or arr.

75:51 Full Band I or arr.

75:52 Full Band II or arr.

75:53 Woodwind I or arr.

75:54 Brass I or arr.

75:55 Percussion II or arr.

75:56 Violin II or arr.

75:57 Piano II or arr.

75:58 Organ II or arr.

75:59 Horn I or arr.

75:60 String Bass II or arr.

75:61 Woodwind II or arr.

75:62 Brass II or arr.
Nuclear Medical Technology

Instruction in student's minor field of performance or for economic major offered for fee of $20.00 per semester, course consists of one one-half hour lesson or two hours of class (three weeks weekly) as option of instructor

50:17 Voice 0 to 1 a.h.
50:18 Piano 0 to 1 a.h.
50:19 Organ 0 to 1 a.h.
50:20 Harp 0 to 1 a.h.
50:21 Violin 0 to 1 a.h.
50:22 Viola 0 to 1 a.h.
50:23 Cello 0 to 1 a.h.
50:24 String Bass 0 to 1 a.h.
50:25 Woodwind 0 to 1 a.h.
50:26 Brass 0 to 1 a.h.
50:27 Percussion 0 to 1 a.h.
50:116 Music 1 a.h.
50:119 Music 1 a.h.
50:121 Organ 1 a.h.
50:122 Horn 1 a.h.
50:123 Violin 1 a.h.
50:124 Viola 1 a.h.
50:125 Violin 1 a.h.
50:126 String Bass 1 a.h.
50:127 Woodwind 1 a.h.
50:128 Brass 1 a.h.
50:129 Percussion 1 a.h.

Ensemble

No fee charged for ensemble; courses may be requested for credit offered each semester; prerequisite for each course of instruction

50:176 The Concertante Singers 1 a.h.
50:184 Bel Canto Choir or, choral
50:190 Chamber Singers 0 to 2 a.h.
50:192 Opera Workshop or, choral
50:193 Oratorio 0 to 2 a.h.

50:194 Collegium Musicum 1 a.h.

Audition before selection is desirable

50:195 University Choir 1 a.h.
50:196 Piano Accompaniment or, choral
50:197 Piano Chamber Music or, a.c.
50:198 String Chamber Music or, a.c.
50:199 Woodwind Chamber Music or, a.c.
50:190 French Chamber Music or, a.c.
50:116 Oratorio 1 a.h.
50:121 Choral Workshop 0 to 1 a.h.
50:122 Studio 0 to 1 a.h.
50:123 Master Class 1 a.h.
50:124 Chamber Music, Wind Ensemble, Concert Band
50:125 Orchestra Ensemble 1 a.h.
50:126 Jazz Workshop 0 or 1 a.h.

prerequisite consent of instructor

Summer Instruction

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

Courses

See "General Science" for description

Neurobiology

See "College of Medicine"

Nuclear Medical Technology

Program Coordinator: R. E. Peterson
Degree offered: B.S.

Nuclear Medical Technology is that portion of the allied health professions field which encompasses the techniques of using radionuclides in medicine. Due to the burgeoning of new techniques for studying body processes and imaging organs and disease sites, the new medical specialty of nuclear medicine has developed. Simultaneously, a wider variety of sophisticated equipment unique to the field has come into use, along with an increasing variety of radionuclides and radiopharmaceuticals. The breadth of these specialized procedures, in addition to volume demands, led to the development of this new allied health occupation and new training program. The role and significance of the nuclear medical technologist have become well established and are increasing as allied medical specialties come to rely upon nuclear medicine and its trained personnel.

The Program in Iowa

Development of the curriculum and enrollment in the program began in 1967. It has been facilitated by a five-year U.S. Public Health Service development grant for new health manpower personnel. It was the second baccalaureate program established in the U.S. and has educated more nuclear medical technologists than any other program in the country.

The original reasons for the program's establishment remain valid and have encouraged its expansion: in the job market, nuclear medical technologists are commonly paid as well as school teachers; why not have them equally well prepared? A good baccalaureate program facilitates the effort to develop the most competent technologists and multiply the amount of good patient care which the responsible physician can provide. Such a program increases the capability to attract high-quality technologist candidates. And the baccalaureate program with a general science major offers the nuclear medical technologist something to build on, in terms of an educational ladder and vocational mobility: science teacher, graduate school, medical school, etc.

The program in nuclear medical technology at Iowa is accredited by the Council on Medical Education of the American Medical Association and the requirements established by the American Board of Nuclear Medicine. The program, which has been reviewed by the AMA Accreditation Board, involves three years of preclinical work in the College of Liberal Arts and a minimum of 12 months of professional clinical experience, available in Iowa City at the University Hospitals, and Veterans Administration Hospita.

The preclinical education of a nuclear medical technologist encompasses a well-rounded general science major curriculum with special adaptations to the field. During the freshman year, it is the same as for medical technology. During the sophomore year and thereafter, the availability and number of recommended prerequisites produces some deviation from the medical technology program. Upon satisfactory completion of the 12-month clinical program (the entire four-year program), students are eligible to receive the degree of Bachelor of Science in a major in general science and nuclear medical technology, and also be eligible for national certification as a nuclear medical technologist.

All students in the College of Liberal Arts who designate nuclear medical technology as a major are assigned to nuclear medical technology advisors for guidance in the completion of the preclinical courses of study.
Nuclear Medical Technology

Practical Program

The required courses of study emphasize the physical and biological sciences, which provide a basic background and which are prerequisites for the subjects and activities of the clinical year. In addition to these science courses, the prospective student must fulfill the core course requirements for graduation from the College of Liberal Arts and the requirements for a general science major.

The following is a summary of the prerequisites for acceptance into the nuclear medical technology program:

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

A minimum of 96 semester hours must be completed prior to entrance into the 12-month clinical year with a 20 minimum cumulative grade-point average for all preclinical courses of study.

Clinical Program

The clinical year of study is centered in the Veterans Administration and University medical facilities. In terms of time allocations, equal emphasis is given to both didactic and clinical experiences. The didactic portion covers in depth the clinical or technical specialties of physics of nuclear medicine, basic instrumentation, scanning instrumentation, radiology, chemistry, basic pharmacology, basic pedagogical techniques, electrophoresis, chromatography, liquid scintillation, health physics, principles of nursing-care techniques, photographic chemistry and darkroom techniques, principles of clinical administration, dosage conference and case critique, fundamentals of microbiology, clinical chemistry, kinetic studies and medical ethics.

Rotations were established in the following areas within the departments of nuclear medicine at both medical facilities: in vivo radiopharmacy procedures, clinical radiopharmaceutical laboratory, tracer techniques and research application, thyroid function studies, rectilinear and camera scanning, and in vivo kinetic studies.

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

Admission

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

Staff: Professor Peterson; associate professor Chang; assistant professor Claudbien, instructor and student advisor; Inerinin; clinical laboratory staff.

Nuclear Science and Technology

Committee Chairman James O. Seburn
Degree Offered: B.S.

Nuclear science and technology is an interdepartment program offered through the cooperation of the Graduate College, the College of Engineering; the departments of Mathematics, Chemistry and Physics in the College of Liberal Arts; and the Radiation Research Laboratory of the College of Medicine.

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

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

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

- 20M 28 Advanced Calculus III
- 29:2 College Physics
- 4:8 Principles of Chemistry II
- 52:150 or 56:62 Thermodynamics

Program Requirements

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

- Nuclear physics (recommended: 29:191-192) 6 s.h.
- Nuclear reactor analysis and design (recommended: 52:253) 2 s.h.
- Nuclear technology (recommended: 52:180, 56:134, 52:232) 6 s.h.
- Chemistry (recommended: 4:170 or 4:201) 3 s.h.
- Radiation biology (recommended: 77:05), lectures only; or 77:10) 4 s.h.
- Electives: advanced courses in chemistry, physics, mathematics, engineering, radiation biology, computers

Total (without thesis) 38 s.h.

Admission

To enter the program, a student must have a B.S. degree
Philosophy

Department Chairman: Panayot Butchvarov
Degrees offered: B.A., M.A., Ph.D.

The Undergraduate Program

The undergraduate program in philosophy provides knowledge of the basic issues and the main developments in Western philosophy, and strengthens logical skills which are useful in a wide variety of fields. A major in philosophy can provide preparation for the advanced studies necessary for a career in religion or law, for example, as well as for positions in government and business which require a general education and a capacity for clear and systematic thinking. Advanced degree work is necessary for college teaching positions in philosophy.

Training in philosophy at the undergraduate level involves primarily discussion of the major philosophical problems. This discussion ordinarily takes place through a study of important traditional and contemporary philosophical works. The program also includes training in modern logic and the philosophy of science. Undergraduate majors are required to take at least 24 semester hours of courses numbered from 26:101 to 26:191, including the following:

26:101 Introduction to Philosophy
26:102 Introduction to Ethics
26:103 Introduction to Logic
26:104 Introduction to Philosophy of Science
26:110 Ancient Philosophy
26:113 Early Modern Philosophy

As undergraduate major may be permitted to substitute other philosophy courses for one or more of the courses listed above.

The Honors Program

The Department offers an Honors Program for undergraduate majors of superior ability. To be admitted a student must have a cumulative grade-point average of at least 3.6. Individual Honors programs are developed by the student in consultation with his or her advisor in the Department.

Graduate Program

The graduate program in philosophy is designed to train future teachers and scholars in philosophy. The main areas in the graduate curriculum are metaphysics and epistemology, history of philosophy, ethics, logic, and philosophy of science. In addition, courses are offered in the philosophy of the social sciences, political philosophy and the philosophies of history, religion, law and literature. Students may also take courses in related areas offered by other departments.

The Master of Arts degree requires a minimum of 30 semester hours and may be taken with or without thesis. In addition, the student must pass a comprehensive examination ordinarily taken after three semesters of graduate work. The examination will cover the history of philosophy, logic and philosophy of science, metaphysics and ethics. There is no foreign language requirement for the Master of Arts degree.

The Doctor of Philosophy degree is granted primarily on the basis of achievement rather than on the accumulation of semester hours, but typically will take four years of graduate study to obtain. Candidacy for the doctoral program is determined in part by the master's comprehensive examination. In addition, the student must pass a doctoral comprehensive examination to be taken at or near the end of the third year of graduate study and after satisfaction of the foreign language requirement. The examination will cover the history of ancient and medieval philosophy, history of modern philosophy, logic and philosophy of science, metaphysics and epistemology, and ethics. For the doctoral degree mastery of French, German, Latin or Greek is required. For French and German the E.T.S. examinations are used. For Latin and Greek the Department arranges special examinations. The fourth year of graduate study is ordinarily spent in writing the doctoral dissertation.

Staff: professor Bergmann, Butchvarov; associate professor Addis, Cummis, Dueltlinger, Gram; assistant professors Osceola, Scarr

Courses for Freshmen and Sophomores Only

26:1 Elementary Ethics 3 a.h.
Trends of thought and methods of argument in moral and social issues; both semesters.
26:2 Elementary Logic 3 a.h.
Elementary study of valid and invalid reasoning; both semesters.
26:3 Elementary Political Philosophy 3 a.h.
Elementary philosophical study of life, government and the state; both semesters.
26:4 Problems of Mind and Matter 3 a.h.
Elementary study of metaphysics and epistemology; both semesters.

Courses for Undergraduates Only

26:3 Philosophy of Man 4 a.h.
Some major philosophical questions of man and society from Plato to present; same as Core 110.
26:5 Philosophy of Nature 4 a.h.
Philosophical consideration of impact of key developments in scientific thought on man's conception of himself; same as Core 114.

Courses for Undergraduates and Graduates

26:01 Introduction to Philosophy 3 a.h.

Courses for freshmen only

26:02 Analytical and Historical Introduction surveying fundamental issues and arguments, 3 a.h.
26:03 Introduction to Ethics 3 a.h.
26:04 Analytical and historical introduction to ethical theory 3 a.h.
26:05 Introduction to Logic 3 a.h.
26:06 Analytical and historical introduction to modern logic 3 a.h.
26:07 Introduction to Philosophy of Science 3 a.h.
26:08 Analytical and historical introduction to modern scientific concepts, laws and theories, concepts of science. 3 a.h.
26:09 Analytical and historical introduction to modern philosophical logic 3 a.h.
26:10 Analytical and historical introduction to modern metaphysics and epistemology 3 a.h.
26:11 Analytical and historical introduction to modern philosophy 3 a.h.

Majors and minors may take such as Plato and Aristotle, 3 a.h.
26:12 Analytical and historical introduction to modern philosophy 3 a.h.
26:13 Analytical and historical introduction to modern philosophy 3 a.h.
26:14 Analytical and historical introduction to modern philosophy 3 a.h.

Majors and minors may take such as Aristotle and Aquinas, 3 a.h.
26:15 Analytical and historical introduction to modern philosophy 3 a.h.
26:16 Analytical and historical introduction to modern philosophy 3 a.h.

Majors may also take courses in Classics or Kant
Physical Education for Men

Department: Health, Leisure, and Sport

(Same as Exercise Science and Sport Management)

Preparation for Teaching and Coaching

The program in teaching and coaching is designed specifically to prepare students for service in public schools. All students who complete this program must qualify for teaching certificates by completing appropriate courses in physical education and the required certification courses (see "College of Education"). The program leads to the B.S. degree in physical education. Graduation from the program requires a 2.3 G.P.A. point average.

Because physical education majors frequently have part-time jobs or participate in intercollegiate athletics, both of which take considerable time and effort, the Department offers this program in eight, nine, and 10-semester sequences.

Pre-Doctorate Program

The pre-doctorate program, which is open only to superior students, is designed to prepare students for graduate work in physical education with emphasis on exercise physiology, adapted physical education, audiology, biomechanics or evaluation and statistics. The curriculum consists of a core course in physical education and selected courses in mathematics, the biological sciences, and general electives.

Physical Education for Men

Required courses for the Doctor of Physical Education Program

26:233 Seminar Philosophy of Logic

May be repeated for credit

26:234 Seminar Philosophy of Science

May be repeated for credit

26:235 Seminar Ethics

May be repeated for credit

26:236 Seminar History of Ancient Philosophy

May be repeated for credit

26:237 Seminar History of Medieval Philosophy

May be repeated for credit

26:238 Seminar History of British Philosophy

May be repeated for credit

26:239 Seminar History of Continental Philosophy

May be repeated for credit

26:240 Research Value Theory

May be repeated for credit

26:241 Research Metaphysics

May be repeated for credit

26:242 Research Logic and Epistemology

May be repeated for credit

26:243 Research History of Philosophy

May be repeated for credit

26:244 Theses in Philosophy

May be repeated for credit

Physical Education for Men

Department: Health, Leisure, and Sport

Degrees Offered: B.S., B.Ed., M.S., M.Ed., Ph.D.

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Physical Education for Men

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sciences and the physical sciences which are basic to advanced study in the area in which the student is interested. Because the student need not meet certification requirements for teaching in the public schools, this curriculum offers considerable latitude in the selection of electives to fit individual interests and needs. This curriculum leads to the B.A. degree with a major in physical education.

Endorsement for Coaching

The State Department of Public Instruction recently provided for the endorsement of certified teachers for the coaching of athletic teams in schools. This endorsement is intended for teachers who hold majors in subjects other than physical education but who wish to coach interscholastic athletics teams. The endorsement does not permit the teacher to teach physical education classes in the school.

Endorsement for Athletic Trainers

This endorsement is provided for students who want to be certified as trainers for athletic teams at the secondary school level as a minor part of their regular teaching duties.

Pre-Physical Therapy Program

The pre-physical therapy program capitalizes on a unique juxtaposition of facilities at Iowa. Within a six-block radius are located the College of Medicine, the University Hospital, the Veterans Hospital, the School for severely-handicapped children, the Psychopathic Hospital, the Pine School for mentally-retarded children and the Field House, which houses the Department of Physical Education for men.

The proximity of these facilities, together with the close working relationships between the physical education faculty and the faculties of various departments in the College of Medicine, offer an ideal setting for a pre-physical therapy program. Because there is a rapidly-increasing demand for physical therapists who are willing to serve as athletes trainers for schools, college and university teams, the pre-physical therapy program in physical education renders a valuable service to schools and colleges, as well as to the paramedical aspects of physical therapy.

Graduate Programs

M.A. without Thesis

The study program leading to the M.A. degree without thesis is designed as a terminal unit of advanced study for teachers of basic physical education for all students in schools, community colleges and four-year colleges, and for athletic coaches. Emphasis is placed on the application of research findings to the organization, teaching and evaluation of basic physical education programs for all students in schools and colleges, and to the coaching of intercollegiate and interscholastic athletic teams. Particular attention is given to the problems associated with teaching and coaching in the public schools and community colleges in Iowa. The curriculum is so organized and administered that rather large numbers of students can be accommodated with a minimum of faculty.

M.A. with Thesis

The study program leading to the M.A. with thesis is designed primarily as the first step in a program of graduate study leading to the Ph.D. degree. There is particular emphasis upon techniques of research as applied to problems related to physical education and athletics. A secondary emphasis of this program is to provide advanced preparation for the teacher who wishes to teach—or who intends to teach—in programs for undergraduate majors in physical education in four-year colleges, but who do not plan to continue on to the doctorate.

An attempt is made to thoroughly acquaint the M.A.-with-thesis candidates with the nature and extent of research in all areas of physical education.

Ph.D. Program

The program for the Ph.D. in physical education is based on the concept that the successful candidate should have a broad knowledge of all areas in physical education; a working knowledge of the research techniques which may appropriately be applied to problems in physical education and athletics; and knowledge in depth in at least one of the accepted areas of specialization in physical education.

The accepted areas of specialization in physical education are: Adapted Physical Education; Anatomy; Biomechanics; Curriculum, Supervision and Administrative Theory in Physical Education and Athletics; Exercise Physiology; History of Physical Education and Sports; Measurement and Evaluation in Physical Education; Motor Performance and Learning; Sociology of Sports; and Therapeutics.

A broad background in all areas of physical education, together with a working knowledge of appropriate research techniques, is provided through the required courses in the M.A.-with-thesis curriculum and the core of courses required for all Ph.D. candidates. With the exception of six semester hours of statistics, all of these courses are taught by members of the Physical Education faculty.

To ensure that each candidate becomes truly expert in one area of specialization, he is required to complete a minimum of 24 semester hours of graduate work in that area of specialization and to write an acceptable Ph.D. thesis on a problem in the area.

Most of the courses in the areas of specialization are offered by departments other than the Department of Physical Education for Men. Professors from these departments participate in writing and evaluating the comprehensive examinations, serve on thesis committees for the initial presentation of the proposed problem and participate in the final examination, in which the candidate defends his thesis. In the case of exercise physiology, the candidate, in addition to writing a comprehensive examination in physiology, writes a comprehensive examination in physiology which is prepared and evaluated by faculty members of the Department of Biological and Physiological Sciences in the College of Medicine. Such candidates graduate with minors in physiology.

Financial Aid

Student financial aid is available through tuition scholarships, teaching assistantships, research assistantships, NDEA fellowships in exact physics, teaching research fellowships and EPDA fellowships for the Education Specialist degree.
Admission Requirements

M.A. with and without Thesis

Admission to the program of study leading to the M.A. degree with or without thesis is granted on the basis of the student's grade-point average on all undergraduate work attempted and his score on the Graduate Record Examination (Apicius Test). The student must have earned at all undergraduate work attempted a grade-point average of 2.5 (A = 4) or higher to be admitted to regular status. Conditional admission to the M.A.-without-thesis program may be granted to students with grade-point averages no lower than 2.2; however, such students must qualify for regular status within 18 to 24 sessions of registration in the Graduate College, by attaining a grade-point average of at least 2.5.

Ph.D. Program

The student is admitted to the study program leading to the Ph.D. degree on the basis of his grade-point average on the work completed for the M.A. or M.S. degree and his score on the Graduate Record Examination (Apicius Test). To be considered for admission, the student must have earned a grade-point average of 3.0 or higher on all graduate work undertaken.

Facilities

With the construction of a mammoth new Recreation Building, along with the recent refurbishing of the Field House, excellent facilities exist for use in the physical education skills program, in the undergraduate and graduate instructional programs and for student participation in intramural sports, recreational activities and athletics.

Research laboratories for physiology of exercise, temperature-humidity control, motor performance and bio-mechanics are located in the Field House and provide excellent facilities for instruction and research at both the undergraduate and graduate levels.

Because of its cooperative efforts with other departments to facilitate special programs, the Department provides an opportunity for students to use additional special facilities in other departments on the campus.

The Faculty

Members of the faculty in Physical Education for Men are frequently sought as participants in programs at state, district and national professional meetings, and are elected to offices at all levels. Some have been invited to present papers as international symposia and congresses. They are also asked to serve in community and state in many capacities. Several have received special recognition through honors and awards from numerous professional organizations.

One reason for the high quality of the faculty is the wealth of experience its members have had teaching at all levels in a variety of situations.

Members of the faculty are also productive researchers and prolific writers. Some have received funds for their research from governmental and private agencies, and all have made significant contributions to professional journals.

The Department has been ranked among the top few in the country. Although such rankings are based on several criteria—curriculum, publications, availability of research and library resources, scholarships and fellowships—the quality of the faculty is apparent as a major factor.

Staff: Professor Allen, Aspereg, Canaday, Smith; associate professors: Narramore, Hotchkell, Tingay; associate professors Emeriti: Armington, McCuskey; assistant professors: Allen, Giardini, Hav, Leslie, Maynard; assistant professors emeriti: Bebein, Reid, Tfenugger; intramural: Eric, Sibbe, Spill; instructors (coaching): Banks, Cresswell, Hartshorn, Koldenmiller, Leuthner, Roberts, Schloss, Schultz, Zappe

* Department of Athletics

Courses Primarily for Undergraduates

275 Physical Education for Men or, cheat for students who have satisfied requirements for physical education skills (for their skills); both seniors

276 Physical Education for Men or, cheat for 275; both seniors

277 Elective Physical Education for Men or, cheat for 276; both seniors

278 Elective Physical Education for Men or, cheat for 277; both seniors

279 Elective Physical Education for Men or, cheat for 278; both seniors

2711 Introduction to Physical Education 1 s.h.

2712 Seminar in historical and educational aspects of physical education; 1 s.h.

2730 Intramural Sports of Dance 1 or 2 s.h.

2731 Teaching of Recreational Sports I 2 s.h.

Technique and methods of teaching and organizing groups for participation; first semester

2732 Teaching of Recreational Sports II 2 s.h.

Continuation of 2731; second semester

2733 Teaching of Gymnastics 2 s.h.

Teaching techniques of conditioning exercises, character apparel and wrestling exercise; both seniors

2733 Coaching and Gymnastics 2 s.h.

Prerequisite: high school varsity experience or equivalent

2733 Coaching of Football 2 s.h.

Prerequisite: high school varsity experience or equivalent

2734 Coaching of Football 2 s.h.

Second semester; prerequisite: high school varsity experience or equivalent

2735 Coaching of Track and Field Athletics 2 s.h.

Second semester; prerequisite: high school varsity experience or equivalent

2736 Coaching of Track and Field Athletics 2 s.h.

Third semester; prerequisite: high school varsity experience or equivalent

2737 Teaching of Swimming 2 s.h.

2738 Coordinating of Competitive Swimming 2 s.h.

Second semester; prerequisite: high school varsity experience or equivalent

2739 Coaching of Wrestling 2 s.h.

Second semester; prerequisite: high school varsity experience or equivalent

2741 Coaching of Tennis 2 s.h.

Prerequisite: high school varsity experience or equivalent

2742 Coaching of Football, Basketball and Baseball 2 s.h.

2743 Administration of Interscholastic Athletics 2 s.h.

Both seniors

2746 Human Anatomy 2 s.h.

Both seniors

2748 Laboratory Practice in Special Physical Education 3 s.h.

Prerequisites: Psychology 171:13 and 273:15; laboratory experience in adapted physical education, orientation and corrective therapy, both seniors

2748 Laboratory Practice in Special Physical Education 3 s.h.

Continuation of 274; both seniors

2749 Leadership Training I 1 s.h.

Class instruction before engineering

2754 Leadership Training II 1 s.h.

Class instruction before engineering

2758 Leadership Training III 1 s.h.

Class instruction before engineering
Courses for Undergraduates and Graduates

27/103 Administration of Physical Education and Athletics 2 or 3 s.h.

27/105 Physical Education 2 s.h.

27/106 Selected Topics in Physical Education 1 or 2 s.h.

27/107 Workshop in Advanced Theory of Athletics 1 or 2 s.h.

Summer session only

27/108 Advanced Theory and Techniques of Swimming and Diving 2 s.h.

27/109 Advanced Theory of Teaching Gymnastics 1 s.h.

27/118 Physical Education for High Schools 3 s.h.

Summer session only

27/148 Intramural Programs in Schools and Colleges 2 s.h.

Summer session only

27/149 Elementary School Physical Education 2 or 3 s.h.

27/103 Advanced Anatomy and Kinesiology 3 s.h.

Examination prerequisite for teaching anatomy and kinesiology at undergraduate level, first semester.

27/110 Instructional Study in Physical Education 2 or 3 s.h.

27/110A Studies in Economics of Physical Education 3 s.h.

27/111 Analysis of Athletic Performance 1 or 3 s.h.

Students who have completed 27/111 and equivalent requirement for one semester hour only, first semester.

27/118 Laboratory: Mechanical Analysis of Athletic Performances 2 s.h.

27/119 Physical Education for Elementary Schools 3 s.h.

Same as Education 75/141.

27/119A Measurement and Evaluation in Physical Education 3 s.h.

First semester

27/120 Scientific Foundations of Physical Education I 4 s.h.

27/121 Scientific Foundations of Physical Education II 4 s.h.


27/182 Laboratory in Athletic Training I 2 s.h.

First semester

27/183 Laboratory in Athletic Training II 2 s.h.

Continuation of 27/182 second semester

27/198 Supervision of Physical Education for Boys 3 s.h.

Same as Education 75/246.

Courses for Undergraduates

27/182 Laboratory in Athletic Training I 2 s.h.

27/183 Laboratory in Athletic Training II 2 s.h.

27/198 Supervision of Physical Education for Boys 3 s.h.

Same as Education 75/246.

27/201 Research 4 s.h.

Counsel Department head before registering, both semesters

27/205 Advanced Administration of Physical Education 2 s.h.

First semester

27/206 Medical History of Physical Education 2 s.h.

First semester

27/210 Advanced Theory of Athletics 3 s.h.

Advanced theories of coaching football, basketball, baseball, track and field athletics for graduate students and grounded in coaching methods, semester session only.

27/211 Measurement and Evaluation in Physical Education 2 s.h.

27/212 Public School Curriculum in Physical Education 3 s.h.

Same as Education 75/245.

27/241 Scientific Principles of Physical Conditioning 1 or 3 s.h.

Students who have completed 27/160 or equivalent requirements for one semester hour only.

27/217 Seminar: Mechanical Analysis of Human Movement 2 s.h.

27/218 Advanced Measurement and Evaluation in Physical Education 3 s.h.

Second semester

27/219 Seminar: Exercise Science for M.A. without thesis 2 s.h.

27/218 Research I 1 or 3 s.h.

Students who have completed 27/160 or equivalent requirements for one semester hour only; major learning principles and practical implications for teaching

27/219 Colloquium no cr.

Special lecture summer session only

27/311 Orientation of Graduate Study no cr.

27/312 Seminar: Motor Learning II no cr.

Booth not required completed previous courses in motor learning should first complete 27/308. Instruction of research literature on motor learning and motor performance. Students must meet with faculty advisor for course requirements prior to enrollment.

27/313 Seminar: Learning and Performance of Junior Skills Laboratory 3 s.h.

Students must meet minimum levels on all tests and maintain good attendance in 27/313. Students who have completed 27/313 or equivalent must submit 27/317.

27/317 Seminar: Research in Physical Education Curriculum 3 s.h.

27/318 Seminar: Research in Measurement and Evaluation in Physical Education 3 s.h.

27/401 Seminar: Thesis I (M.A.) 3 s.h.

27/402 Seminar: Thesis I (B.A.) 3 s.h.

27/403 Seminar: Thesis II (Ph.D.) 3 s.h.

27/404 Seminar: Thesis IV (Ph.D.) 3 s.h.

27/405 Seminar: Thesis III (Ph.D.) 3 s.h.

Physical Education for Women

Department Head: M. G. Helms Scott
Degree offered: B.A., B.S., M.A., Ph.D.

Physical education is a recognized profession for women, a profession which is becoming more and more varied in today's society. Elementary schools frequently hire the physical education specialists to work in one or more schools in a city system. This is a field of work which is emerging. The college program is being recognized so that both pre-school and elementary school age children are receiving acceptable and challenging physical education trained personnel in their play activities and is planned developmental programs in motor skills.

At the secondary level the physical education teacher deals with a variety of activities, many of a recreational value with potential for lifelong use. There are expanding opportunities for coaching the high school group in competitive sports, or in some of the art forms of movement such as synchronized swimming, rhythmic gymnastics, entomology and dance.

At the college level programs usually permit students to follow their own preferences and to experience the joy of movement and self-identity in motor accomplishment. The teacher of physical education is a counselor and guide in such learning.

When the physical education-trained woman assumes the role of mother and community leader, she has the benefit of knowledge about children, their development, interests and activity needs.

Undergraduate Curriculum

The Department of Physical Education for Women provides professional education in three curricula: teaching physical edu-
cation, dance and pre-physical therapy. The dance curriculum may be oriented to dance teaching or to the arts, depending upon electives. Graduates of the Department enter teaching positions in physical education or dance in public schools or at the college level, or positions in recreation; or they undertake advanced work in dance leading to a career in the theatre or advanced work in physical therapy, depending upon the curriculum elected.

Each student in the physical education curriculum elects a wide variety of activities, thus preparing for general public school teaching. These activities include team and individual sports, gymnastics, dance and aquatics. The activity options also permit advanced work in many activities, so that the student is also prepared to teach at advanced skill levels in that area or to go into coaching in a particular sport. If she chooses she may have coursework and practical experience in coaching a particular sport.

Theoretical background is provided through anatomical, kinesiological, physiological and health courses, with implications for the performance and teaching of activities. The emphasis is on preparation for teaching, but provision is made for entry in almost any graduate program of physical education if the student later wishes to undertake graduate work.

The student who plans to teach must meet certification requirements (see "College of Education"). The teaching curriculum leads to either the B.A. degree or the B.S. degree; the pre-physical therapy to a B.S. degree. The non-professional and dance curricula lead to the B.A. degree.

Each student must make application not later than the sophomore year for Departmental recommendation to the College of Education and professional education courses, as well as continuation in the physical education curriculum she has elected. Any student failing to maintain a grade-point average of 2.2, or having displayed marked inadequacies for teaching or a leadership role, may be dropped from the program.

Transfer students coming into one of these programs are subject to all the requirements for students starting in the program.

The Department also administers a non-professional major in health and physical education, known as General Studies in Health, Physical Education and Recreation. The purpose of this program is to give a background in health, physical education and recreation, not as a preparation for a career but as a broad acquaintance with material relevant to personal and family recreation and healthful living. Each student's program is individually planned with an advisor following broad guidelines and oriented to the student's objectives in selecting this major.

Honors Program

The Honors Program is designed to serve the interests of the superior student. To be eligible for Honors, the student must have at least a B average at the beginning of the junior or senior year when Honors courses are taken. She must complete at least the B average throughout the remainder of her college work. This is an opportunity to get some experience in research and gain a perspective on certain aspects of graduate work.

Graduate Programs

Graduate work is offered in physical education, dance and recreation. Curricula lead to the M.A. in physical education, dance or recreation education and to the Ph.D. degree in physical education.

The curricula assume previous education in the respective fields. A program is then planned with the individual in light of her previous education and anticipated future career. Completion of the graduate degree usually leads to teaching, administration or supervision in the schools or in a university. Research preparation is provided for anyone who wishes to orient her career in that direction. All M.A. students do some type of research, though the options are highly variable.

The Department was one of the pioneers in graduate physical education programs for women. In the nearly half century of graduate work there has been a growing philosophy of education for women and many of the graduates of these programs have and are still playing leadership roles in the profession, in their institutions and their communities.

The outstanding characteristics of the graduate programs are flexibility of program planning for the individual student, and diversity of areas of research which are available to the student. Attendance at both summer sessions and the academic year are helpful in obtaining full opportunities for diversity of instruction.

The graduate student works primarily in the Department of Physical Education for Women, but the resources of the entire University are available, as needed, for the individual student. Work outside the Department provides a broader view and enrichment for the selected specialization of the doctoral candidate. The most common areas of specialization have been administration, measurement, motor learning, anatomy and biomechanics, physical education for preschool and elementary school age children, statistics and research, and adaptive individualized programs. Others are possible. Occasionally an internship program is arranged in the summer.

The student group is cosmopolitan and international in make-up.

A research laboratory is available in the Women's Gymnasium. It is equipped primarily for kinesiological and biomechanics research and motor learning, including equipment for electromyographic research. The Laboratory is open on a cooperative basis. Complete computer service is available as needed for research.

Faculty

The faculty represents diversified background and specialization. Abilities and interest are complementary. Most faculty members hold advanced degrees. Several bring educational backgrounds from abroad. All are experienced teachers. Graduate faculty members all are experienced in research and writing and are available for the guidance of graduate students in their area of specialization.

Staff: Professor Fox, Scott; Professor Emorius Hailey; Assistant Professor Burke, Lyle L.; Professor Miller, Stan; Assistant Professor Emorius Taylor; Instructors Brooks, Caine, Evans, Foose, Gilbreath, Graffy, Grinn, Matsen, Ogdon, Robinson, Thayer

Satisfactory completion of the professional curriculum qualifies candidates for the Professional Examination Service (P.E.S.) test for licensure in Iowa and most other states.

Classroom and laboratory instruction in physical therapy is presented in a manner intended to develop a sound basic knowledge of human anatomy, physiology, neurology, orthopedics, surgery, medicine and of the psychological aspects of human illness, as each knowledge may be applied to the treatment of disabilities through physical therapy procedures.

Orientation to all health professions and the responsibility of each to provide optimum patient care is stressed throughout the program. The clinical education experiences provide the student with opportunities to develop skills in the evaluation of disabilities and in the preparation and execution of treatment programs.

Admission Requirements

The application deadline is February 1. Each new class begins in August.

The Graduate Record Examination must be taken during the senior year in order to register in the Graduate College for the second year of the professional program.

Students may enter the program upon completion of the junior year of college work, or the equivalent. The student who has not already done so must receive the bachelor's degree in his undergraduate major upon completion of his first year in physical therapy. It is essential that each student satisfy the requirements of a major department as well as the requirements of the College of Liberal Arts for a baccalaureate degree.

Minimum science prerequisites are two semesters (eight semester hours) of physics, chemistry, biology or zoology, and six semester hours of psychology. Chemistry, physics, biology or zoology courses must include laboratory work. As the quality of work in the general sciences is basic to success in physical therapy, the admissions committee gives special attention to grades in science courses.

The student must have and maintain at least a 2.5 grade-point average on a 4.0-point system.

Application must be made to the Director of Admissions, The University of Iowa. Personal interviews may be required. Applicants will be contacted for the appointment for required interviews.

Preprofessional Program

Freshman Year

10:1-2 Rhetoric

Physical Education Skills

4 s.h.

5 s.h.

Historical-cultural core course(s)

4 s.h.

4:1 and 4 Principles of Chemistry I-II

6 s.h.

4:6 Elementary Chemistry Lab

2 s.h.

Sophomore Year

Literature core course(s)

8 s.h.

Foreign language (for equivalent proficiency)

8 s.h.*

Social science core course(s)

8 s.h.

37:3 Principles of Animal Biology

5 s.h.

Electives

Junior Year

21M:4 Trigonometry

2 s.h.

29:1-2 College Physics

8 s.h.

37:101 Principles of Human Genetics

3 s.h.

Professional Program

First Year

60:109 Human Anatomy

4 s.h.

72:151 Intermediate Physiology

5 s.h.

101:115 Kinesiology

3 s.h.

101:131 Physical Agents

cr. arr.

101:141 Professional Orientation and Ethics

cr. arr.

22S:101 Biostatistics

3 s.h.

60:110 Anatomy and Neuroanatomy

4 s.h.

69:104 Pathology

1 s.h.

101:110 Principles of Medicine

cr. arr.

101:110 Therapeutic Exercise I

4 s.h.

101:122 Emotional Problems of the Disabled

2 s.h.

Second Year

64:112 Neurology

2 s.h.

75:150 Surgery

cr. arr.

76:101 Orthopedics

cr. arr.

101:102 Principles of Medicine II

cr. arr.

101:106 Medical Sciences

2 s.h.

101:111 Therapeutic Exercise II

4 s.h.

101:118 Clinical Education I

2 s.h.

101:112 Therapeutic Exercise III

3 s.h.

101:113 Physical Therapy and Community Health

3 s.h.

101:119 Clinical Education II

3 s.h.

101:121 Administration

2 s.h.

101:190 Electrotherapy

3 s.h.

101:120 Clinical Education III

4 s.h.

Advanced Degree Programs

Included in the definition of physical therapy is the treatment and evaluation of disease by non-medical means. Elements involved in this treatment and evaluation include such things as pain, coordination, motor development, ability to move limbs, strength and posture. Most of these elements can be included under the umbrella of biomechanics, which is the study of motion and forces as they relate to the human body. The remaining elements tend to fall in the neurophysiological area (e.g. therefore a knowledge of biomechanics and neurophysiology must be applied to the human for evaluation and treatment of the diseases which can potentially be helped by non-medical means).

At this point in time there is a need to scrutinize old techniques and develop new techniques so that patients may receive the best possible treatment for such diseases as central paralysis, stroke, arthritis, multiple sclerosis, and maladies like fractures, amputations and joint pain. The master's degree program in physical therapy is dedicated to this end.
Because the program is designed to increase the student’s knowledge and problem-solving ability in the areas of evaluation and treatment, the program includes research as well as teaching. The four major components of the program are the acquisition of tools to solve a problem; learning advanced techniques in evaluation of neurological disorders, electro-diagnosis and biomechanics; learning communication skills in teaching and administration; and learning through participation in several problem-solving endeavors. The program is sufficiently flexible to accommodate elective pursuits commensurate with the student’s ability and interest.

Admission

To be considered for admission to the master’s degree program, the applicant must be a graduate of an approved professional program of physical therapy, meet the requirements of the Graduate College, successfully complete the professional examination test for physical therapists and take a Graduate Record Examination Aptitude Test.

Traineeships

A traineeship grant from the National Institutes of Health is awarded to each student in the program.

Program Requirements

A total of 30 semester hours of graduate work must be completed beyond the basic professional training, and a thesis is required.

Recently a Ph.D. program open only for physical therapists has been approved by The University of Iowa. This program is intended to produce professionals with advanced training to fulfill positions of leadership in the physical therapy profession and to assume positions in graduate and basic professional educational programs.

The master’s degree program is based in Children’s Hospital at the Medical Center on its main University campus. It is in the same general area of Children’s Hospital as the Physical Therapy Clinic. The professional program is approximately five miles away. Personnel associated with the master’s degree program in physical therapy are at liberty to use the space and equipment in the orthopedic-biomechanics laboratory, and another biomechanics laboratory is available in the College of Engineering. These laboratories are equipped with instrumentation—electrogoniometers, force plate, high-speed camera, motion analyzer, accelerometers and force table—needed to solve problems of force and motion associated with the human in the normal and abnormal state.

The graduate program is an integral part of a collaborative study of medical problems with orthopedics and engineering. The master’s degree program and the Physical Therapy Clinic are interrelated in terms of rehabilitation, staff conferences and consultation for patient care. Interaction with the basic professional program consists primarily of teaching practicum by advanced degree candidates to students in the basic professional program.

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>63:161</td>
<td>Statistical Methods in the Biomedical Sciences</td>
</tr>
<tr>
<td>101:275</td>
<td>Analysis of Selected Neurological Disorders</td>
</tr>
<tr>
<td>103:213</td>
<td>Seminar: Physical Therapy</td>
</tr>
<tr>
<td>103:320</td>
<td>Physical Therapy: Leadership Series</td>
</tr>
<tr>
<td>72:102</td>
<td>Physiology of Exercise</td>
</tr>
<tr>
<td>27:241</td>
<td>Scientific Principles of Physical Conditioning</td>
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</tbody>
</table>

Recommended Courses

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>101:290</td>
<td>Advanced Electrotherapy and Electrodiagnosis</td>
</tr>
<tr>
<td>103:280</td>
<td>Practicum: Teaching Methods and Design</td>
</tr>
<tr>
<td>68:255</td>
<td>Principles of Organization and Management</td>
</tr>
<tr>
<td>103:324</td>
<td>Independent Study</td>
</tr>
<tr>
<td>3:120</td>
<td>Fundamentals of Laboratory Instrumentation</td>
</tr>
<tr>
<td>7:162</td>
<td>Designing Learning Programs for Health Careers Education</td>
</tr>
<tr>
<td>7P:342</td>
<td>Data Processing</td>
</tr>
<tr>
<td>7V:101</td>
<td>Operation of Audiovisual Equipment</td>
</tr>
<tr>
<td>7V:110</td>
<td>Selection and Utilization of Educational Media</td>
</tr>
<tr>
<td>27:312</td>
<td>Seminar: Motor Learning II</td>
</tr>
<tr>
<td>31:123</td>
<td>Psychology of Learning</td>
</tr>
</tbody>
</table>

Elective Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>76:212</td>
<td>Indications Conference</td>
</tr>
<tr>
<td>70:139</td>
<td>Orientation to the Rehabilitation of the Hand-Injured Child</td>
</tr>
<tr>
<td>59:223</td>
<td>Mechanics of Solids</td>
</tr>
<tr>
<td>59:21</td>
<td>Computational Methods</td>
</tr>
<tr>
<td>5:100</td>
<td>Child Development</td>
</tr>
<tr>
<td>7H:211</td>
<td>Problems in College Teaching</td>
</tr>
<tr>
<td>6A:116</td>
<td>Accounting</td>
</tr>
<tr>
<td>6A:130</td>
<td>Budgeting</td>
</tr>
</tbody>
</table>

Staff: professor emeritus W. Paul; associate professor emeritus Farry; assistant professors Jones, Morrisey, Rambo, Sears, clinical assistant professor D. Paul, instructors Donlevy, Skovby, necro Super

Medical advisor for professional program: Merlin P. Scottsmann

Medical advisor for master’s degree program: Richard C. Johnston

Consultants: professors Pafi, Fonsetti; associate professors Stewart, Sesnell (Orthopedics); professor Miller, associate professor Holloway (Education); professor Rim, associate professors Andrews, Cao (Engineering); professor Metcalf (Anatomy); associate professor Tipton (Physiology); professor Van Allen

Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>101:191</td>
<td>Principles of Medicine (or art)</td>
</tr>
<tr>
<td>101:192</td>
<td>Principles of Medicine II (or art)</td>
</tr>
</tbody>
</table>
| 56:210 | Lec., demonstrations, case-presentations of medical disorders from standpoint of anatomy, clinical signs and symptoms, treatment and prognosis, prerequisites: 101:191

(Only to be taken only by those in the professional program)
Physics and Astronomy

4.5, 4.6
Principles of Chemistry
and Elementary Chemistry
Laboratory
5 s.h.
or
4.8, 4.9
General Chemistry II and
The General Chemistry Laboratory
5 s.h.
Undergraduate majors who plan to pursue graduate study in
physics are advised to:
* Take 29:171, 172 Methods of Theoretical Physics;
* Acquire reading facility in either Russian or German;
and
* Go beyond the minimum requirements listed above to
the greatest feasible extent.

Undergraduate Major in Astronomy

Astronomy includes the subdisciplines of astrophysics, classical
astronomy, radio astronomy and space astrophysics. A balanced
and integrated program of astronomy, physics and mathematics
courses is required for the Bachelor of Arts degree in astronomy.
The purpose of this program is to prepare the student for a career
or advanced study in astrophysics, radio astronomy or space
astronomy.
The following courses or their equivalents are required for the
Bachelor of Arts degree with a major in astronomy:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>29:171, 172</td>
<td>Introductory Physics I, II</td>
<td>12 s.h.</td>
</tr>
<tr>
<td>29:173</td>
<td>General Astronomy</td>
<td>8 s.h.</td>
</tr>
<tr>
<td>29:179, 180</td>
<td>Introduction to Stellar Astronomers I, II</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>29:125, 126</td>
<td>Electricity and Magnetism</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>29:132</td>
<td>Intermediate Laboratory</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>29:137</td>
<td>Astronomical Laboratory</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>29:191</td>
<td>Atomic Physics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>29:130, 131</td>
<td>Elementary Theoretical Mechanics I, II</td>
<td>6 s.h.</td>
</tr>
</tbody>
</table>
Undergraduate majors in astronomy who plan to pursue graduate
study in astrophysics are advised to:
* Go beyond the minimum requirements listed above to
the greatest feasible extent;
* Take 29:171, 172 Methods of Theoretical Physics;
and
* Acquire reading facility in one or more of the following
languages: Russian, German and French

Honors
Selected junior and senior majors take six to eight semester
hours of 29:99 Honors Thesis and prepare an undergraduate
thesis as part of their program for the degree Bachelor of Arts
with Honors in Physics or Astronomy.

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

Graduate Program

Two advanced degrees are offered in physics, the Master of
Science (with or without thesis) and the Doctor of Philosophy;
and one in astronomy, the Master of Science (with or without
thesis). A student who wishes to pursue a program in astronomy
beyond the M.S. level must qualify for a degree in either
degree in physics with specialization in astronomy or
astrophysics.

The Department of Physics and Astronomy cooperates in
interdisciplinary doctoral programs with the Program in
Applied Mathematical Sciences (see "Graduate College"). An
interdisciplinary program leading to the M.S. and Ph.D.
degrees in chemical physics is also available.

Each entering graduate student is assigned to a faculty adviser
who will assist him or her in preparing a plan of study and in
guiding the student’s progress. A graduate student becomes a
candidate for an advanced degree in physics or astronomy
after passing a qualifying examination in all principal areas of
the subject at the level of advanced undergraduate work. The
examination is given during the first week of the second semester
each year and must be taken by all first-year graduate students.
Ordinarily, a candidate for any advanced degree should begin
research in a chosen specialty during the second year of
residence. The thesis or essay adviser then becomes the candidate’s
general adviser and the chairman of his or her final examination
committee.

For the general admission and degree requirements, see
"Graduate College."

Master of Science Degree in Physics

The M.S. degree is offered with thesis or without thesis. Either
degree may be an intermediate step toward a Ph.D. degree, or
it may be a terminal degree. The final examinations in either case
are in an oral or 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 origi-
nal experimental or theoretical investigation by the candidate.
No more than six of the minimal 30 semester hours may be for
research (29:281).

The program for the M.S. degree without thesis requires 30
semester hours of graduate study, an independent study of the
literature on a chosen topic and the preparation of a critical essay
on that topic. No more than four of the minimal 30 semester
hours may be for the critical essay (29:220). Up to one-third of
the graduate program may be in related scientific fields other
than physics and mathematics, e.g., chemistry, astronomy, engi-
neering, etc.

The candidate for either of the M.S. degrees must have satisfi-
cy the following courses or their equivalents as
an undergraduate or a graduate:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>29:117</td>
<td>Optics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>29:118</td>
<td>Kinetic Theory and Thermodynamics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>22M:130, 131</td>
<td>Elementary Theoretical Mechanics</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>29:125, 126</td>
<td>Electricity and Magnetism</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>29:131</td>
<td>Advanced Laboratory</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>29:171, 172</td>
<td>Methods of Theoretical Physics</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>29:191</td>
<td>Atomic Physics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>29:92</td>
<td>Nuclear Physics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>29:193</td>
<td>Introductory Solid State Physics</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>
The student's plan of study should provide for as much advanced work as possible and for some advanced courses in physics as listed below:

Master of Science Degree in Astronomy

The M.S. degree is offered with thesis or without thesis. The requirements for the two degrees are the same as for the corresponding degrees in physics (see above), with these changes:

**Delete:**
28:192 Nuclear Physics
28:193 Introductory Solid State Physics

**Add:**
28:119, 120 Introduction to Stellar Astrophysics I, II 6 s.h.
28:121 Solar System Astrophysics 3 s.h.
28:133 Advanced Laboratory 2 s.h.
28:137 Astronomical Laboratory 2 s.h.

If the student intends to continue for a Ph.D. in physics with an astrophysics specialization he or she should take the following courses as soon as possible:

28:121 Radio Astronomy 3 s.h.
28:232, 233 Theoretical Astrophysics I, II 6 s.h.
28:234 Stellar Structure and Evolution 4 s.h.
28:235 Special Topics in Planetary and Space Science 2 s.h.
28:263 Space and Stellar 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 they specialize in research to be in an experimental or a theoretical area;
- Comprehensive examinations;
- Participation in advanced seminars;
- Original research in experimental physics, theoretical physics or astrophysics; and the preparation of a written dissertation based on this work; and
- Successful defense of the dissertation in a final oral examination conducted by a committee of five members of the Graduate Faculty appointed by the dean of the Graduate College.

Emphasis is on the capabilities developed and knowledge gained rather than on the particular courses taken, credits acquired or other aspects of the means to the end. Although no specific courses are required, the following are recommended as preparation for the comprehensive examinations:

28:191, 192, 193 Atomic Physics, Nuclear Physics and Introductory Solid State Physics
28:205 Classical Mechanics
28:212 Statistical Mechanics I
28:213, 214 Classical Electrodynamics
28:245, 246 Quantum Mechanics I, II

Advanced mathematics, such as the theory of functions of a complex variable and vector and tensor analysis, is used freely in these courses. An introduction to these fields is given in 28:171, 172 Methods of Theoretical Physics. The selection of less advanced course work will depend on the adequacy of the student’s preparation for graduate work; the student’s choice of more advanced and specialized course work will depend on the direction in which his or her interests develop.

Before a Ph.D. candidate is admitted to the comprehensive examinations, he or she must demonstrate a thorough competence in French, German or Russian by receiving a grade of 500 or better in the Educational Testing Service foreign language examination or by passing the reading examination administered by the appropriate language department; or by having satisfac-
torily completed 12 or more semester hours of college course-
work (or the equivalent) in any one of the above three foreign languages. Students whose native language is not English will be considered as special cases.

A candidate for the Ph.D. degree will not be recommended for the degree until he or she has written the dissertation in proper form for formal publication and has submitted it, with the approval of the research adviser, for publication to a standard scientific journal of wide distribution.

Research

The Department has an excellent library and a number of well-equipped laboratories and observatories. An IBM 160/65 digital computer and the associated facilities of the University Computer Center are available for research by students and staff of the Department. Several other smaller computers are available within the Department. The central machine shop is fully equipped and staffed with skilled instrument makers and machinists, and there are several electronics and machine shops for the use of advanced students and the research staff.

Experimental research is conducted in the fields of nuclear structure physics, ionospheric and space physics, geophysics, solar and planetary physics, chemical physics and solid state physics.

Theoretical research is devoted to atomic and nuclear theory, quantum field theory, astrophysics, plasma physics, theory of solids, theory of elementary particles, solid state theoretical physics and astrophysics.

Exceptional opportunities are available for experimental re-
search in space physics.

Persons qualified for graduate study are invited to apply for fellowships and assistantships. Inquiries should be directed to the head of the Department.

Staff: professors: Carlson, Frank, Montgomery, Nelson, Norbeck, Van Alten, professors emeriti: Tyndall, Wiley, associate professors: Carpenter, Gurnett, Henshaw, Kline, Knezevic, McClimont, Neff, Savage; assistant professors: Fix, Joyce, Payne, Schuessler, Schweizer, Shawhan; visiting associate professor Daniel W. Swift; research assistant professor: Enmark.

Courses

Physics

Prerequisites and course specifiers as given may not be waived by instructor; students may not repeat for either credit or quality points a course which, if they have already completed, either for credit or quality points, counts toward the same major or the equivalent, in prerequisites: core courses 28:1, 2 College Physics, eight semes-
Political Science

Department Chairman: Russell M. Ross
Degrees offered: B.A., M.A., Ph.D.

The program in political science deals with general principles of human behavior and organization which enable us to understand and explain political situations, events and problems in the world around us. Both the undergraduate and graduate programs in political science emphasize broad and comprehensive study, rather than narrow specialization on restricted aspects of the subject. The facilities of the Department's Laboratory for Political Research and the Regional Social Science Data Archive afford a unique opportunity for both undergraduates and graduate students to come to grips with real problems through the analysis of real data, and, particularly at the graduate level, the methodological segments of the Department's program provide opportunities for acquiring expertise and experience which are matched by few other institutions.

At the undergraduate level the program is general and not vocational. Undergraduate political science majors often enter careers in law, public service or teaching; but many also enter careers in business, journalism, medicine and other fields. At the graduate level the Department emphasizes the general Ph.D. program, which is particularly appropriate for students planning a scholarly career. It is also suitable for entry into the executive ranks of the civil service of federal, state and city governments.

There is a special M.A. program in municipal administration, designed to prepare students for careers as city managers. The general M.A. program frequently leads to careers in civil service and in municipal or other governmental research bureaus, as well as to careers in teaching.

Undergraduate Programs

The Department offers a standard major (Plan A) and a special teaching major (Plan B). The special major is for those who seek a public school teaching certificate.

Plan A: Standard Major

Undergraduates seeking a standard major must meet the following requirements:

A. At least 42 semester hours of work in political science, including:

30:1 American Politics
Two of these introductory courses:
30:10 Introduction to Political Behavior
30:11 Introduction to Political Theory
30:12 Introduction to Comparative Politics
30:13 Introduction to World Politics

Twelve or more semester hours of work in political science offerings numbered above 100.

B. Complete at least 12 semester hours of work (not including core courses) in at least two of these departments: Economics, Geography, History, Philosophy, Psychology, Sociology, Anthropology, European Literature and Thought. If the student earns all 12 semester hours within one of these departments, the selection of courses need not have the prior approval of his or her adviser. But if the student wishes to combine work from two departments, prior approval must be obtained. Completion of the above requirements fulfills the College of Liberal Arts social science core requirement.

C. A grade-point average of at least 2.0 in all political science courses, and in all courses in related Departmental area of concentration of 12 semester hours or more, selected as referred to in B above. Majors must take all courses in political science and related field on a grade basis.

Plan B: Teaching Major

Undergraduates seeking a teaching major must meet these requirements in a program as preparation for high school teaching in the social sciences with an emphasis on political science:

A. At least 20 semester hours of work in political science, including requirements A. 1-2 in Plan A, and eight or more hours of work in political science offerings numbered above 100.

B. At least 16 semester hours, not including core courses or courses taken in lies of them. The 16 semester hours may include eight semester hours in survey courses in American history; and eight semester hours in two courses offered by the Economics, Geography, Sociology, and Anthropology departments.

C. Completion of the sequence of professional education courses leading to certification.

Honors in Political Science

Honors sections of some courses are scheduled for limited groups of outstanding students. Those interested should consult the appropriate instructor at the time of registration or before.

In addition, the Department has a program for majors in political science leading to a B.A. degree with Honors. It is open to a limited number of students with a minimum general grade-point average of 3.0 in the fall or spring term or when a student has completed 12 semester hours of work in political science, he or she must have a grade-point average in political science of at least 3.3 in addition to a general grade-point average of at least 3.0. For graduation with honors the student must maintain the grade-point average just indicated; complete at least two semesters of work in the advanced Honors Seminar (30:17, 18) with a grade of B or better each semester; and satisfactorily pass a comprehensive examination over the field of political science, at the end of the junior year.

Students interested in seeking a B.A. degree with Honors should see the Departmental Honors adviser prior to the beginning of the junior year.

Graduate Programs

Graduate students in political science must meet the general requirements of the Graduate College. In addition they are expected to be familiar with, and are held responsible for, the specific Departmental requirements set forth in the Guide to Graduate Study in Political Science, available in the office of the Department chairman.

Admission requirements are fixed by the Graduate College. The normal Departmental requirements include an acceptable Graduate Record Examination score and a 3.0 minimum under-
graduate cumulative grade point. To be eligible for candidacy for a graduate degree, students must be in good standing. The student seeking the award of an M.A. degree must maintain a grade-point average of at least 3.0; the student seeking a Ph.D. degree must show promise of scholarly distinction and achievement beyond that indicated by a grade-point minimum of approximately 3.4.

Graduate study consists of work in courses, seminars, reading and research. Graduate students in political science may take for credit only those Departmental courses offered specifically for graduate students, i.e., those courses numbered 30-200 and above.

M.A. Programs
To obtain a master's degree with thesis, the student must complete at least 30 semester hours with a grade-point average of at least 3.0. The master's degree without thesis requires 36 semester hours of graduate credit. The Department also offers an M.A. degree in political science under a joint program with the College of Law (see Graduate College requirements for the maximum hours of work allowed). In addition, the student must meet the following specific Departmental requirements:

Normal Load
At the master's level, a normal load is 12 semester hours of credit each semester. The student may register for six to eight semester hours in the summer session and complete the 30 semester hours of work for the M.A. degree in a 12-month period.

Courses Outside the Department
A master's student may take only one course or seminar outside of the Department for each semester or summer session, except where special Departmental programs (e.g., municipal administration) specify otherwise. The student may, of course, register only for Departmental courses or seminars.

Master's Thesis
The student beginning graduate work in the fall will begin planning the thesis during the spring semester, in consultation with an adviser and will ordinarily register for six semester hours of credit during the ensuing summer or fall session to complete the thesis, provided that he or she is admitted to candidacy. If the student has begun in the summer, he or she will ordinarily register for one course (four semester hours) and six semester hours of 30:382 Master's Thesis during the spring semester.

Final Examination
Satisfactory performance in a final oral examination, covering both thesis and coursework, completes the requirements for the M.A. degree. The thesis examining committee must, if the student desires to continue to do Ph.D. work, make a recommendation as to whether or not the student may proceed. Under no circumstances will there be more than eight semester hours of credit for thesis preparation be counted in satisfying the 30 semester-hour minimum requirement.

M.A. in Municipal Administration
Master's degrees of students who complete the program in this field carry the special designation M.A. "in municipal administration." The program, which does not require a thesis, gives both an academic and professional training. While strongly oriented toward cities with the council-manager form of government, it is not exclusively concerned with it. It is designed to prepare students for the municipal administrator's role of co-ordinating the physical, fiscal and social aspects of community development. The program normally requires two years to complete and includes an internship of from nine to 12 months. The B.A. or B.S. degree is required for admission. Undergraduate concentration in social sciences, engineering or accounting is helpful but not required. The normal curriculum for the M.A. in municipal administration includes the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>30:101</td>
<td>Municipal Government and Politics</td>
<td>3</td>
</tr>
<tr>
<td>30:120</td>
<td>Introduction to Public Administration</td>
<td>3</td>
</tr>
<tr>
<td>30:121</td>
<td>Municipal Administration</td>
<td>3</td>
</tr>
<tr>
<td>30:221</td>
<td>Financial Administration</td>
<td>4</td>
</tr>
<tr>
<td>30:323</td>
<td>Problems in Public Administration</td>
<td>4</td>
</tr>
<tr>
<td>30:421</td>
<td>Urbanization</td>
<td>4</td>
</tr>
<tr>
<td>53:155</td>
<td>Environmental Health</td>
<td>3</td>
</tr>
<tr>
<td>102:101</td>
<td>Introduction to Planning</td>
<td>3</td>
</tr>
<tr>
<td>31:154</td>
<td>Personal Psychology</td>
<td>3</td>
</tr>
<tr>
<td>30:383</td>
<td>Internship</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>38</td>
</tr>
</tbody>
</table>

Ph.D. Program
A student seeking a Ph.D. degree is expected to complete at least three academic years in residence in a graduate college, including the work for an M.A. degree, which is normally prerequisite to work toward a Ph.D. Students who transfer from other colleges and universities will not be considered Ph.D. candidates unless they have completed M.A. degrees elsewhere. The student may apply to the adviser for a waiver of the requirement for an M.A. degree; the adviser will present the application to the student's examining committee, which will examine the student as it sees fit and make recommendation to the departmental chairman.

Examination
The student seeking a Ph.D. degree must demonstrate command of one foreign language or other tool of research, selected with the approval of the doctoral committee. If a foreign language is selected, the student must give proof, through a special examination, of a reading knowledge adequate for research purposes. If something other than a foreign language is selected as the tool (e.g., statistics), the student's doctoral committee will specify the criteria determining whether the requirement has been met; a minimum of six semester hours will be necessary. The tool requirement must be met before the student takes the comprehensive examinations.

Comprehensive Examinations
The student must pass comprehensive examinations in four fields of study, at least three of them in political science. Within the first month after the appointment of the Ph.D. examining committee, the student must also consult with the other members
of the committee concerning his or her work in their fields. There are seven fields of study in political science, divided into three groups:

Group A: American Government and Politics; Public Administration
Group B: Political Theory; Comparative Government; International Relations
Group C: Philosophy of Political Research; Methods of Political Research

A student must offer at least one field in both Groups A and B.

Teaching and Research Training
Each Ph.D. candidate in political science must acquire at least one semester of special supervised training in teaching and one in research. This instruction is normally given in association with the student’s service as a teaching or research assistant.

A student seeking a Ph.D. degree should apply for admission to candidacy by filling a plan of study with the Graduate College before taking its comprehensive examinations. Students are expected to take comprehensive examinations after the completion of the second full year of graduate work.

Doctoral Dissertation
The student must write a doctoral dissertation. Not more than 30 semester hours of credit are granted for the preparation of dissertations, and students may not register for credit for reading or research solely for the purpose of direct work on their dissertations.

Special Facilities
The Laboratory for Political Research was begun in 1963 with the primary function of facilitating training in research methods in political science. The Laboratory assists faculty members in utilizing empirical data and the computer in their undergraduate instruction. This assistance is provided primarily to the faculty of the Department of Political Science and to a broad range of social scientists at the 10 institutions that make up the Regional Computer Center. The Laboratory is an integral part of graduate education in the Department and is involved at every level of graduate training. Publications produced in the Laboratory for Political Research include a newsletter for social scientists at the schools making up the Regional Computer Center and a report series comprising substantive or methodological papers. The facilities of the Laboratory include three typewriting machines, a counter/sorter, two communications terminals and a card reader/line printer.

Special Faculty Strengths
The American Council on Education’s most recent ranking of political science departments offering graduate studies placed the Iowa Department of Political Science eighth among the several hundred departments in the nation. For the last 30 years the Department has ranked high in every study made. For example, Iowa ranked behind only Harvard, Chicago and Columbia (1936-1942) in the number of political science doctorates produced during that time period.

The Department definitely feels there is a proper role for the members as individuals to play in the political process. Faculty members have served in congress, as members of congressional committees, as executive assistant to a governor and as mayor of a municipality; as members of city councils, regional planning commissions and community school boards; and in other public offices.

Unlike many political science departments, this department has organized and staffed itself to integrate teaching, research and service in an overall program through the Laboratory for Political Research.

Staff: Professors Boynton, Davis, Johnson, Kelso, Leeuweswegen, Murray, Peterson, Rosen, Schindler, Snow, Van Dyke, Walford, Professor Emeritus Porter; Associate Professors Kim, McCrone, Welsh; assistant professors Cary, Green, Irwin, McClusky, Peterson, Instructor Madsen

Introductory Undergraduate Courses
301 Introduction to American Politics 4 s.h.
Discussion of American political system; function of national politics in institutional setting; local and state government organization and administration.
302 Introduction to International Relations 4 s.h.
Discussion of contemporary international relations; the role of the United States in the world; functional and structural aspects of contemporary international relations.
303 Introduction to Comparative Politics 4 s.h.
Comparative study of political systems; political values and political thought; the role of the state in international politics.
304 Introduction to Public Administration 4 s.h.
Introduction to the principles and methods of public administration; the role of government in the economic process; the role of government in the political process; the role of government in the social process.
305 Introduction to Political Theory 4 s.h.
Introduction to political theory; the role of political thought in the development of political thought; the role of political thought in the development of political institutions.
306 Introduction to the Legal Process 4 s.h.
Introduction to the legal process; the role of the law in political institutions; the role of the law in the development of political institutions.
307 Introduction to the Political Process 4 s.h.
Introduction to the political process; the role of political institutions in the development of political institutions; the role of political institutions in the development of political institutions.
308 Introduction to Public Policy 4 s.h.
Introduction to the principles and methods of public policy making; the role of public policy in the development of political institutions; the role of public policy in the development of political institutions.
309 Introduction to Public Administration 4 s.h.
Introduction to the principles and methods of public administration; the role of government in the economic process; the role of government in the political process; the role of government in the social process.

Advanced Undergraduate Courses
301 The Presidency 3 s.h.
Introduction to the presidency; the role of the president in American political institutions; the role of the president in the development of political institutions.
302 The Congress 3 s.h.
Introduction to the Congress; the role of the Congress in American political institutions; the role of the Congress in the development of political institutions.
303 The Supreme Court 3 s.h.
Introduction to the Supreme Court; the role of the Supreme Court in American political institutions; the role of the Supreme Court in the development of political institutions.
304 The States 3 s.h.
Introduction to the states; the role of the states in American political institutions; the role of the states in the development of political institutions.
305 The Political Process 3 s.h.
Introduction to the political process; the role of political institutions in the development of political institutions; the role of political institutions in the development of political institutions.
306 The Policy Process 3 s.h.
Introduction to the policy process; the role of policy in American political institutions; the role of policy in the development of political institutions.
307 The Legal Process 3 s.h.
Introduction to the legal process; the role of law in American political institutions; the role of law in the development of political institutions.
308 The Political Economy 3 s.h.
Introduction to the political economy; the role of economic institutions in American political institutions; the role of economic institutions in the development of political institutions.
309 The Political System 3 s.h.
Introduction to the political system; the role of the political system in American political institutions; the role of the political system in the development of political institutions.
310 The International System 3 s.h.
Introduction to the international system; the role of international institutions in American political institutions; the role of international institutions in the development of political institutions.
32.341 Political Systems of Western Europe 4 s.h.
Senator Western European political systems or political phenomena common to several Western European systems.
Research seminar on selected topics of Soviet and Eastern European political systems, permission of instructor required.
32.342 Far Eastern Political Systems 4 s.h.
Study of political systems in Asia and East Asia. Special emphasis on leadership, culture, and international political processes.
32.344 Latin American Political Systems 4 s.h.
Major political forces in Latin America: political parties, Church, military, etc. Emphasis primarily for graduate students with little or no previous knowledge of Latin American politics.
32.346 Comparative Electoral Politics and Party Systems 4 s.h.
Study of political parties and electoral systems in Great Britain, France, and Germany, emphasis on the role institutions play in the process of political change.
32.348 Comparative Judicial Processes 4 s.h.
Rules of courts, lawyers, judge and justice groups in America and selected foreign political systems.
32.354 Problems in Constitutional Law and Politics 4 s.h.
Enforcement of state constitutions and selected cases clarifying role of Court in American political system; may be repeated with consent of instructor.
32.352 Comparative Problems of Administrative Politics 4 s.h.
Advanced study of administrative politics of several political systems; may be repeated with consent of instructor.
32.356 Community Political Systems 4 s.h.
Comprehensive analysis of community decision-making; special emphasis on political institutions within local community.
32.381 Problems of International Politics 4 s.h.
In-depth examination of selected issues of international politics, emphasizing problems of theoretical analysis; may be repeated with consent of instructor.
32.382 Human Rights and World Community 4 s.h.
Nature of human rights; internationalized obligations relating to these; problems of implementation; same as 45.351, 19:365, 91:329, 10:280.
32.386 Readings  cr. arr.
Consent of supervising faculty member required.
32.381 Research in Political Science  cr. arr.
Consent of supervising faculty member required.
32.382 Master's Thesis  cr. arr.
Consent of supervising faculty member required.
32.383 Internships  cr. arr.
Consent of supervising faculty member required.
32.386 Research in Comparative Legislative Behavior 4 s.h.
Systematic comparative analysis of legislative institutions and behavior in United States, Europe and developing countries, may be repeated with consent of instructor.
32.389 Research in Judicial Behavior 4 s.h.
Systematic study of ethical and social decision-making; lower court judicial process with emphasis on the interaction between the judicial branch and other political actors; may be repeated with consent of instructor.
32.390 Research in Public Opinion and Citizen Behavior 4 s.h.
Research projects on political attitude and behavior in mass politics, may be repeated with consent of instructor.
32.397 Research in Social and Political Change 4 s.h.
Study of the relationship between social and political change, including change agents, process, and factors; may be repeated with consent of instructor.
32.398 Research in Administrative Behavior 4 s.h.
In-depth analysis of the power of the modern administrative state, the changing roles of administrative organizations, reorganization, professionalism, decision-making, information flow, small group processes, and technology, budgeting, others; may be repeated with consent of instructor.
32.399 Research in International Relations 4 s.h.
Research projects in international politics, law, and organizations; may be repeated with consent of instructor.
Advanced Research Seminars
32.3809 Public Administration 4 s.h.
Selected topics in public administration; may be repeated with consent of instructor.
32.3811 Seminar (Urbana) 4 s.h.
Problems and consequences of urbanization process, economic, social and political study of metropolitan areas; may be repeated with consent of instructor; same as 32.3811.
32.3849 Urban Theory 4 s.h.
Selected contemporary approaches to urban theory including urbanization, population, and economic conditions of metropolitan areas; may be repeated with consent of instructor.
32.3842 Community Development 4 s.h.
Selected problems in Community Development; may be repeated with consent of instructor.
32.441 Political Parties 4 s.h.
Systematic investigation of origin, organization, communication, leadership, and function of parties in either American or other European systems; may be repeated with consent of instructor.
32.442 Legislative Behavior 4 s.h.
Consent of instructor required; may be repeated with consent of instructor.
32.443 Judicial Behavior 4 s.h.
Consent of instructor required; may be repeated with consent of instructor.
32.444 Political Elites and Leadership 4 s.h.
Study of backgrounds, careers, attitudes and behaviors of political leaders; geographical focus may vary; may be repeated with consent of instructor; same as 16:235.
32.445 Political Socialization 4 s.h.
Consent of instructor required; may be repeated with consent of instructor.
32.446 International Relations 4 s.h.
Selected problems in development and utilization of political communication, particularly at international levels; may be repeated with consent of instructor.
32.448 Political Socialization 4 s.h.
Development of political role, attitudes, orientations; emphasis on theoretical and methodological aspects; may be repeated with consent of instructor.
32.451 International Relations 4 s.h.
Selected problems in development and utilization of political communication, particularly at international levels; may be repeated with consent of instructor.
32.450 Ph.D. Dissertation  cr. or. arr.
Permit of supervising faculty member required.

Psychology

Department Chairman: Rudolph W. Schultz
Degrees offered: B.A., B.S., B.A., Ph.D.

Undergraduate Programs

The undergraduate major in psychology is designed to provide a broad general education in psychology, and the undergraduate degree does not qualify one for a job as a psychologist. While the B.A. and B.S. degrees both provide broad general education, the B.A. degree is associated with a program for students desiring a general cultural program in psychology. The B.S. program is designed specifically to meet the needs of students seriously considering graduate study in psychology and related fields. Students taking the B.A. degree who plan to go on for graduate work in psychology are advised to supplement their undergraduate program with additional work in statistics and experimental psychology.

Within the B.A. and B.S. programs, courses are offered in the clinical, social, physiological and general experimental areas of psychology. Work may also be taken in child psychology, educational psychology and speech pathology. The extensive faculty and graduate research programs provide interested undergraduates with an excellent opportunity to participate in a variety of research projects in the laboratory courses as well as in the Honors Program. The content of the undergraduate program provides a balance between theory and application. Each student selects one course from each of these areas, in terms of personal interests and goals.

Group A (clinical and personality)

31.12 Psychology of Adjustment
31.105 Personality and Adjustment
31:136 Operant Analysis of Behavioral Deviants
31:160 Research in Personality
31:161 Current Theories of Schizophrenia
31:163 Abnormal Psychology
31:164 Introduction to Clinical Psychology
31:166 Introduction to Behavior Disorders in Children
31:168 Applications of Psychological Tests

Group B (social)
31:15 Introduction to Social Psychology
31:104 Experimental Social Psychology
31:106 Attitude Change
31:107 Contemporary Social Problems

Group C (general experimental and physiological)
31:119 Human Memory, Learning and Conceptual Processes
31:123 Psychology of Learning
31:124 Mathematically Approaches in Psychology
31:125 Brain Function and Learning
31:126 Physiological Psychology
31:127 Drugs and Behavior
31:128 Motivation
31:135 Perception
31:135 Operant Behavior Analysis
31:137 Sensory Processes
31:141 Differential Psychology

The Bachelor of Arts Degree
In addition to satisfying the general graduation requirements of the College of Liberal Arts, including at least two years of a foreign language, the B.A. student must take 25 semester hours of credit in psychology. At least the last nine hours must be earned in the Department of Psychology at Iowa, and must include either 31:163 Elementary Psychology or 31:161 General Psychology, and either 31:143 Psychological Measurement or 31:120 Experimental Psychology I and 31:143 Introduction to Statistical Methodology, and they must include one course each from Groups A, B and C.

The Bachelor of Science Degree
In addition to meeting the general College of Liberal Arts graduation requirements, the B.S. student must take at least 25 semester hours of coursework in the Department of Psychology, including 31:111 or 31:121, 31:143, 31:120 and 31:121 Experimental Psychology II, and at least one 100-level course from each Group A, B and C.

In addition, the B.S. student must take either one year of chemistry, one year in physics or one semester each in chemistry and zoology, and at least one semester of calculus or equivalent and at least eight semester hours of a foreign language, or at least one year of college algebra and analytic geometry or equivalent and at least two years of a foreign language.

Honors in Psychology
The Department of Psychology has an Honors Program open to all students with at least a 3.3 grade-point average in psychology courses and 3.0 overall. The Honors Program includes research seminars and individual research collaboration with faculty members. Interested students should consult the Department's Honors Adviser before the beginning of the junior year.

Graduate Programs
Graduate study in psychology is designed to provide training which will enable students to make original contributions as a scholar, investigator and teacher, and to apply psychological knowledge to the solution of important practical problems. The clinical program emphasizes laboratory research both on clinical problems and service activities.

Master of Arts Programs
The Master of Arts degree with thesis is required for all students who want to earn the Ph.D. degree at Iowa. A few students will complete their professional training at the M.A. level.

Program prepares the student for service and administrative positions in various industrial, clinical, medical, governmental or educational-psychological facilities, under the general supervision of a senior psychologist or personnel director. The student is expected to achieve competence in the professional skills required for an intermediate level of responsibility. The minimum of 38 semester hours of credit comprises 17 hours of basic required courses and at least 21 hours of electives.

The required courses are selected from the core program. Electives are chosen in light of the student's vocational objectives and in consultation with the adviser.

Action on the student's application for the M.A. degree without thesis will be taken after completion of the specified course work with a minimum grade-point average of 2.7 and satisfactory performance on a written and/or oral examination covering the area of specialization.

Ph.D. Programs
The Department provides specialized training leading to the Ph.D. degree in general experimental psychology, physiological psychology, social psychology and clinical psychology and personnel psychology. The student is expected to achieve comprehensive training capable of enabling the candidate to contribute to the advancement of psychological knowledge and to carry out in an effective manner research programs in the area of specialization.

Ph.D. students are required to maintain a minimum grade-point average of 3.0 during their graduate study. At the end of the first year, the student is expected to have completed the first year's course work and to have satisfactorily completed the comprehensive examination.

The comprehensive examination is a written examination administered by the student's advisory committee. The examination is designed to provide a broad overview of the student's knowledge and understanding of the field of psychology. The examination is typically divided into two parts: one that covers the student's area of specialization and another that covers the general areas of psychology.

The comprehensive examination is generally administered in the fall of the second year, and the student is required to pass the examination by the end of the second year to remain in good standing in the program.

The comprehensive examination is a significant milestone in the student's graduate career and serves as a benchmark for the student's progress. The examination helps ensure that the student has a solid understanding of the fundamental concepts and theories in psychology and is prepared to conduct independent research.

The comprehensive examination is a rigorous and challenging process, but it is essential for the student's success in the program. The examination is administered by the student's advisory committee, and it is divided into two parts: one that covers the student's area of specialization and another that covers the general areas of psychology.

The comprehensive examination is typically administered in the fall of the second year, and the student is required to pass the examination by the end of the second year to remain in good standing in the program. The exami
courses and seminars, the Department invites nationally and internationally eminent psychologists to appear as guest speakers throughout the year. Usually there are opportunities for students to meet informally with these speakers.

Training in the laboratory is an integral part of the student’s work. The acquisition of the appropriate skills for the analytic investigation of behavioral phenomena is regarded as unparal-

Admission Requirements

It is recommended that students who plan to take graduate work in the Department have solid undergraduate training in psychology, including experimental psychology and statistics, and extensive work in the natural sciences, mathematics and the social sciences.

A foreign language is not required. Admission decisions are based upon a composite consideration of the applicant’s under-
graduate academic achievement, letters of reference and per-
formance on the verbal and quantitative portions of the Graduate Record Examination.

Special Facilities

The Department has excellent laboratory and library facilities for graduate work in psychology. Special equipment and laboratories are available for research in the fields of animal and human learning, motor skills, emotions, motivation, sensation and perception, physiological processes, clinical, and personality and social psychology.

The Kenneth W. Spence Laboratories of Psychology are de-
signed and used exclusively for teaching and research in psychol-

The laboratories are among the most outstanding in the field. They contain a number of systems for automated control of experiments, as well as a rapid and precise gathering of data. Facilities include small laboratory computers; several observation suites equipped with closed-circuit TV and audio monitor-
ing equipment for use in clinical and social psychological experimentation; and three animal colonies, soundproof rooms, two surgeons, a laboratory of histology, a darkroom, electrophysiological recording rooms, conditioning laboratories, service shops and a number of additional specialized and general laboratories. Students have easy access to computer facilities within the Department and in the University Computer Center.

Also of major importance for specialized training programs is the availability of such related facilities as the Psychology Clinics; University’s General, Psychiatric and Children’s Hos-

cial; Iowa City Veterans Administration Hospital; University Speech and Hearing Clinic; and University Counseling Center.

Special Faculty Strengths

For more than 70 years, the Department has ranked at or near the top nationally in the number of professional psychologists it has trained at the doctoral level. Since the first national evalua-

Other Unique Aspects of the Iowa Program

Each of the past several years, about a dozen junior and senior students showing exceptional promise have been selected to par-
ticipate in a 10-week summer program of full-time research of their own design, for which they have been paid from National Science Foundation funds. Continuation of this specific program depends on the availability of non-university funds. However, opportunities for similar research experience without financial support are available through special arrangements with the Honors adviser.

Program participants receive two semesters of rigorous prepa-
ration for an Honors seminar, usually conducting a pilot study and acquiring the skills they will need for their summer work. Completion of the program is roughly equivalent to a year of graduate study. Often the work of these participants has been of such scope and quality that it has been published in leading professional journals.

Affiliated Staff: research professor Knott; clinical professor Can-

Librarian in Charge: Psychology Library: Anne G. Evans

Courses for Undergraduates Only

Elect 310 or 313 is prerequisite to other courses in psychology except 3117 and 3119. At least one of 313 and 3119 is recommended for those who plan to take graduate work in psychology.

3117 Elementary Psychology 4 s.h.

3118 General Psychology 4 s.h.

3123 Psychological Testing 2 s.h.

3125 Introduction to Social Psychology 2 s.h.

3131 Social Psychology 4 s.h.

3137 Education Psychology and Measurement 3 s.h.

3139 Psychology in Business and Industry 3 s.h.

3141 Principles of Behavior 3 s.h.

3143 Psychological Assessment 3 s.h.
3.021 Seminar: Chemical Influences on Behavior 2 a.h.
Selected topics in interactions between brain chemistry and behavior; prerequisites: consent of instructor
3.335 Seminar: Neuroendocrinology 2 a.h.
Selected topics on neuroendocrine mechanisms of behavior; prerequisites: consent of instructor
3.537 Seminar: Neuropsychology 2 a.h.
Affluence, sexual and ethnic differences; prerequisites: consent of instructor

Social Psychology
3.191 Advanced Social Psychology 3 a.h.
Current research activities in social psychology; primary emphasis on laboratory study of social behavior; critical evaluation of contemporary theories and methods.
3.193 Interpersonal Dynamics in Contemporary Society 3 a.h.
Studies of stresses and dissatisfactions in contemporary society, personality theory, individual differences, stress and conflict, techniques of improving interpersonal relationships.
3.194 Experimental Social Psychology 3 a.h.
Experimental research in attitude modification, social perception, judgment and related social processes; theory and critical evaluation of methodology in representative areas of research.
3.108 Attitude Change 2 a.h.
Designed to acquaint students with current theoretical approaches to attitude change: hypothesis testing and methods of manipulating attitudes. Readings in research design, critical evaluation of research techniques.

3.197 Contemporary Social Problems 3 a.h.
Role of social psychology in educational opportunities; contributions to social behavior; critical evaluation of social issues or problems for which society needs solutions.
3.198 Small Group Processes 3 a.h.
Chosen work on group processes. No laboratory experiments. Prereq: major in psychology and 32 credits with C or better in psychology.
3.294 Group Dynamics 3 a.h.
Theories of social psychological analysis of social groups, social roles, social influence, interpersonal relations, and group decision-making.
3.390 Social Influences on Behavior 3 a.h.
Methodology, results, and interpretations of studies of influence of social variables on learning, judgment, attitude development and modification, group processes, and social influence.
3.396 Social Learning Processes 3 a.h.
Theory and research on learning in society; topics considered include observational learning, development of social influences, dependence, aggression and affiliation.
3.399 Group Behavior 3 a.h.
Methodology, results, and interpretations of studies of structural properties of groups, group processes and communication, public opinion, and effective group behavior.
3.395 Seminar: Group Behavior 3 a.h.
Selected topics in group behavior, including leadership, conflict, and group process; prerequisites: consent of instructor.
Recreation Education

Program Chairman: John Health
Degrees offered: B.S., M.A.

Study programs in recreation education are sponsored jointly by the departments of Physical Education for Men and Physical Education for Women.

As society becomes increasingly oriented and governed by entertainment, entertainment becomes increasingly responsive to the needs for leisure and recreation. Opportunities for professional recreation leaders becomes more numerous and diverse.

There are opportunities for directors, supervisors and specialists in public recreation at all levels, local to national, in the therapy programs of hospitals, nursing homes and other health care institutions; in industrial recreation; in youth-serving agencies as the Boy and Girl Scouts, Boys' and Girls' Clubs, and YMCA and YWCA; in civil defense programs for the armed forces; in college and university student activities; and in correctional institutions, church organizations, athletic clubs and other institutions and agencies where recreation programming is an important function.

The Bachelor of Science Degree

A student seeking the Bachelor of Science degree must satisfy the College of Liberal Arts general graduation requirements. The student will take the following core courses in literature, social science, natural science and the historical-cultural area, and at least eight semester hours, or equivalent proficiency, in a foreign language. Course requirements for the major are:

Courses in Recreation

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>28:20</td>
<td>Social Forms of Dance</td>
</tr>
<tr>
<td>27:31-22</td>
<td>Teaching Recreational Sport</td>
</tr>
<tr>
<td>27:37</td>
<td>Techniques of Swimming Instruction (or equivalent)</td>
</tr>
<tr>
<td>104:60</td>
<td>Foundations in Recreation</td>
</tr>
<tr>
<td>104:61</td>
<td>Recreation Leadership</td>
</tr>
<tr>
<td>104:62</td>
<td>Social Recreation</td>
</tr>
<tr>
<td>104:63</td>
<td>Recreational Crafts</td>
</tr>
<tr>
<td>104:110-111</td>
<td>Field Work in Recreation</td>
</tr>
<tr>
<td>104:129</td>
<td>Administration of Recreation</td>
</tr>
<tr>
<td>104:134</td>
<td>Recreation Program</td>
</tr>
<tr>
<td>104:140</td>
<td>Principles of Outdoor Recreation</td>
</tr>
</tbody>
</table>

Courses in Related Areas

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>26:37</td>
<td>Fine Art (or equivalent)</td>
</tr>
<tr>
<td>36:33</td>
<td>Public Speaking</td>
</tr>
</tbody>
</table>

Recreation Minor

Recreation Education is an excellent minor for students majoring in elementary or special education.

Honors

For admission to the Honors Program in recreational education, the student must maintain formal application; must have completed 30 semester hours of coursework at The University of Iowa; must have earned 11 of the 32 semester hours of credit required for the recreation education major; and must have at least a 3.5 grade-point average on all college work attempted and on all work attempted in recreation education.

To graduate with Honors in recreation education the student must...
must have successfully completed six semester hours of Honors work at The University of Iowa and must successfully take an Honors examination at the completion of his or her Honors work. The Department offers two Honors courses—104:095 Problems in Honors, 104:192 Seminar: Recreation Education Research. With the permission of the chairperson of his or her Honors committee, the student may take three semester hours of Honors work in another department.

Programs Leading to M.A. Degree
Programs are provided leading to the Master of Arts degree with or without thesis. Admission to these programs is granted on the basis of the student's grade-point average on all undergraduate work attempted and score on the Graduate Record Examination Aptitude Test. To be considered for admission, the student must have earned a grade point average of 2.3 or higher on all undergraduate work attempted.

M.A. with Thesis
The program leading to the Master of Arts degree with thesis is primarily designed as the first step in a graduate program of study leading to an advanced degree. particular emphasis is placed on techniques of research.

Undergraduate Prerequisites
The undergraduate courses listed below (or equivalents), together with elective courses in recreation and related areas sufficient to total 30 semester hours, are required. Required credit may be given for experience and competence in techniques when such competence is demonstrated by examination.

Undergraduate Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundations of Recreation</td>
<td>3</td>
</tr>
<tr>
<td>Administration of Recreation</td>
<td>3</td>
</tr>
<tr>
<td>Recreation Program</td>
<td>3</td>
</tr>
<tr>
<td>Recreation Leadership (or equivalent)</td>
<td>3</td>
</tr>
<tr>
<td>Skills Areas (three of the following)</td>
<td>2</td>
</tr>
<tr>
<td>Outdoor Recreation-Education</td>
<td></td>
</tr>
<tr>
<td>Social Recreation (or equivalent)</td>
<td>2</td>
</tr>
<tr>
<td>Arts and Crafts (or equivalent)</td>
<td>2</td>
</tr>
<tr>
<td>Recreational Sports and Games (or equivalent)</td>
<td>2</td>
</tr>
<tr>
<td>electives</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

Any or all of the courses listed above may be taken after the student has been admitted for graduate study in recreation. They should, however, be taken at the earliest opportunity.

Requirements
The specific courses listed below, together with elective courses sufficient to total 30 semester hours in recreation and related areas, are required for the Master of Arts degree with thesis.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>28:205 Techniques of Research</td>
<td>s.h.</td>
</tr>
<tr>
<td>34:111 Elementary Social Statistics</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>70:163 Introduction to Statistical Methods</td>
<td>3</td>
</tr>
<tr>
<td>104:230 Seminar: Recreation Administration</td>
<td>3</td>
</tr>
<tr>
<td>104:231 Philosophy and Trends in Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104:401 Seminar: Thesis I</td>
<td>1 to 3</td>
</tr>
<tr>
<td>104:402 Seminar: Thesis II</td>
<td>2 to 4</td>
</tr>
</tbody>
</table>

M.A. Without Thesis
The study program leading to the Master of Arts degree without thesis is designed primarily as a terminal unit of advanced study in preparation for the administration or supervision of recreation programs.

Undergraduate Prerequisites
These are the same as for Master of Arts degree with thesis in recreation.

Requirements
The specific courses listed below, together with elective courses sufficient to total 38 semester hours in recreation and related areas, are required for the Master of Arts degree without thesis.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>104:230 Seminar: Recreation Administration</td>
<td>3</td>
</tr>
<tr>
<td>104:231 Philosophy and Trends in Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104:301 Research in Recreation</td>
<td>3</td>
</tr>
<tr>
<td>34:110 Methods of Social Research</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>28:205 Techniques of Research</td>
<td>4</td>
</tr>
</tbody>
</table>

Staff: associate professor Neibit, assistant professors Gworek, Lindsey, instructor Hodges, Lintner Lough

Courses Primarily for Undergraduates

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>104:098 Foundations of Recreation</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>Basic philosophical, historical, scientific foundations and development in leisure and recreation; function and limitations of organizational structures and survey of organizations and agencies concerned with recreation</td>
<td></td>
</tr>
<tr>
<td>104:101 Recreation Leadership</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>Leadership principles and techniques: program activities</td>
<td></td>
</tr>
<tr>
<td>104:110 Social Recreation</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>Practical application of techniques in planning, developing, conducting activities and programs designed for broad variety of social areas</td>
<td></td>
</tr>
<tr>
<td>104:112 Recreation Programming</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>Craft techniques, leadership, funds, and personnel tenure; emphasis on skills of recreation and community leaders in schools, hospitals, and various welfare activities</td>
<td></td>
</tr>
<tr>
<td>104:131 Adapted Recreation Crafts</td>
<td>1.5 s.h.</td>
</tr>
<tr>
<td>Constructed if 104:131 but may be taken as independent unit</td>
<td></td>
</tr>
<tr>
<td>2904:201 Youth Leadership</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>Community skills and techniques for camp counseling; ACA certification program aligns Orientation to Rehabilitation Settings</td>
<td></td>
</tr>
<tr>
<td>104:211 Institutional and community rehabilitation programs encompassing following: psychiatric, retarded, physically handicapped, institutionalized, aging and aged</td>
<td></td>
</tr>
</tbody>
</table>

Courses for Undergraduates and Graduates

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>104:108 Readings in Leisure</td>
<td>s. cr.</td>
</tr>
<tr>
<td>Comprehensive readings, conferences and written reports related to specific issues of leisure in which student has social interest</td>
<td></td>
</tr>
<tr>
<td>104:110 Field Work in Recreation</td>
<td>s. cr.</td>
</tr>
<tr>
<td>Community experiences arranged to include direct leadership, program planning and administrative procedures, prerequisites: 104:129 and permission of instructor</td>
<td></td>
</tr>
</tbody>
</table>
Religion

Program Director: James C. Spelling

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

A central goal of the School of Religion has always been to help as many students as possible—whether or not they are majoring in religion—to gain an understanding of the history and literature of the religions of mankind and insight into the nature and meaning of the religious dimensions in human culture. Such understanding is not only valuable for its own sake, but it is essential for responsible participation in a religiously pluralistic American society and in a pluralistic world community. Many students at the University majoring in other areas elect courses in religion as a part of their general education program, some elect religion as a second major.

An undergraduate major in religion provides a foundation for graduate and professional study in the field of religion, but it is oriented toward understanding more than it is oriented toward vocation. The School of Religion is not a theological seminary, and it does not prepare students for ordination, although a number of our undergraduate majors later attend theological seminaries well prepared for study in those schools leading toward professional careers in churches and synagogues. Other majors continue their academic study of religion toward the M.A. and Ph.D. degrees to become specialists in the study and teaching of religion as a basic dimension of human culture.

B.A. Program

For a major in religion, undergraduate students elect 24 semester hours of coursework in religion according to their own interest, provided they take some courses which give them a general acquaintance with the basic religious traditions one would encounter in the contemporary world. Students majoring in religion will also elect 11 hours in related courses in departments such as Anthropology, Art, Classics, History, Philosophy, Psychology, and Sociology. These courses should be selected with the approval of the major advisor. The advisor must also approve the foreign language submitted by the student to meet the two years' requirement for the B.A. degree.

Honor Program

Religion majors eligible for the Liberal Arts Honor 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, as follows:

Courses Primarily for Graduates

Religious Problems or CR

Same as 3920

104320 Seminar: Administration of Religion 3 s.h.

Problems of administration, supervision and programming in recreation programs

104330 Seminar: Hearing and Touch in Religion 3 s.h.

Introduction to the use of music in worship and its relation to Christian worship

104340 Seminar: Theological Reflection 3 s.h.

Personal and group project approach to theological reflection in specific areas such as family, ethics, and social issues

104350 Seminar: Design and Maintenance of Recreation Facilities 3 s.h.

Principles, terminology, standards of design, planning, construction, operation, maintenance, and financing of recreation facilities

104365 Seminar: College Union Management 2 s.h.

Management of college union food services, recreation facilities, guest rooms, bookstores, maintenance, etc. emphasis on administrative problems

104370 Seminar: Theology I (B.A.) 2 s.h.

Survey of the nature of theology

104372 Seminar: Theology II (B.A.) 2 s.h.

Survey of the nature of theology
Area A: Jewish and Christian Scriptures
  1. Old Testament
  2. New Testament
  3. Post-Biblical Judaism

Area B: History of Christianity
  4. Early (to 1500)
  5. Modern (since 1500)
  6. America

Area C: Theology and Ethics
  7. Jewish
  8. Roman Catholic
  9. Protestant

Area D: World Religions
  10. History of Religions
  11. Intensive Study of Religion in India, China or Japan

Area E: Religion and Personality Development
  12. Religion and Health

Master of Arts Degree

A student must have a reading knowledge of either French or German. The student may substitute another foreign language if it is related to his or her field of study and is approved by an advisor.

The formal course requirement is four courses or seminars at the 100-level or above, in each of three areas. For a total of not less than 10 hours in each area and 30 hours altogether. Four hours of thesis research may be counted toward the total of hours and courses required in a manner determined by the advisory committee for each case. To each of the three areas, the student will be responsible to only one faculty member who will advise him or her on courses in that area; the three faculty members together will constitute the student’s advisory committee.

By the second semester in this program, a student should have decided on areas of concentration. By this time, too, the committee should have been formed.

This committee conducts the master’s examination, written toward the end of a student’s fourth semester of study, and intended as an examination on the 12 courses or seminars taken.

A thesis is also required. It must be approved by the advisory committee but will normally be written under the supervision of only one of the three members. It will not be formally defended except in cases where the advisory committee considers it desirable.

If his her work shows sufficient competence, a student who has completed the master’s degree may continue in the Ph.D. program by petitioning for a change in degree objective. In such case the student will be expected to take and pass the qualifying examinations and to meet the other requirements for the degree.

Doctor of Philosophy Degree

The particular program of each student will be designed with an adviser in accord of the student’s interest in order to represent both a broad and a specialized knowledge within the field of religion and to enable the student to satisfy the following requirements.

In qualifying examinations, the student will be examined in three of the five areas listed above. For this purpose there will be three major written examinations.

After passing all three qualifying examinations (not counting the summer session), the student and adviser will set up a three-member committee for comprehensive examinations.

The committee will determine test subjects for the comprehensive examinations. The student will be expected to write a dissertation in one of the three subject fields in which he or she takes the comprehensive examinations.

The student’s plan of study for comprehensive examinations will include 12 hours of coursework at the 100-level or above, outside the School of Religion with grades of A or B; 10 hours of coursework in one of the fields of religion other than his or her major field of interest with grades of A or B; and not more than three papers which indicate the student possesses the necessary skills required for Ph.D.-level work in his or her special subject.

A reading knowledge of French and German is required in all areas. Since these languages are tools for basic research, students are advised to acquire them as early as possible in their courses of study. Before taking the qualifying examinations, students must have passed the Graduate School Foreign Language Tests in both of these languages or the nature of a student’s specific program of study warrants it, and the faculty permits it, another language may be utilized for French or German.

In addition to French and German, several areas have special language requirements. Students in New Testament, for example, must satisfy Departmental requirements in Greek. All students should consult with their advisers as early as possible concerning the special requirements entailed in their field of study.

A dissertation is also required, and not more than 12 semester hours of credit allowed for it. An oral examination on the dissertation and related materials will be conducted by a committee of five or more members.

The student whose grade-point average in graduate study at Iowa falls below 3.0 will be placed on probation. If the student fails to bring that average up to 3.0 within one semester, ordinarily he or she will be disqualified from further graduate study in the School of Religion.

Faculty and Facilities

The School of Religion remains unique in the quality of its undergraduate and graduate studies in religion within the context of a state university. Its faculty members have received national and international recognition. Beyond the immediate faculty of the School itself, students in religion have access to related faculty in other departments of the College of Liberal Arts and in other colleges of the University. Some of these fellowships are so closely related that they are listed below as af-

affiliated staff. Besides comprehensive literary collections in the areas studied in the School of Religion, there are several special collections in aspects of Judaism and Reform Judaism studies. The library and its staff give excellent cooperation in helping religion students to obtain materials essential to their research.

Staff professors Belgum, Porell, Weitzel, Schramm, Spalding; associate professors Baird, Kunter, McCaig, Nicklasburg, Pacewicz; associate professors Boyle, H. T. Goldstein, Holstein, Paterson,
Reserve Officers Training Corps (ROTC)

There are two ROTC departments at The University of Iowa—Army (Military Science) and Air Force (Aerospace Military Studies). They are academic departments, and credits earned in them may count toward any degree the University offers. Neither department offers a degree, but both offer second lieutenant commissions. The commission is comparable to a degree in that it entitles the holder to an academic standard in leadership and management, it is a requisite for entry into the military profession as an officer and is an important indicant of potential to employers.

Undergraduate Program

The purpose of the ROTC departments is to educate cadets to be officers in the United States Army or Air Force. The subjects which do provide service background, professional skills, ethics, standards and duties, and stress military leadership and management. Cadets who are commissioned serve one tour on active duty at a current starting salary of at least $4,600 per year. They serve in any of 15 Army branches or 48 Air Force functional areas. That commissioned military service is invaluable leadership experience in other fields is borne out by the fact that a remarkably large number of men in key leadership positions of government and industry have ROTC backgrounds.

The curriculum consists of a series of variable-length, interrelated subcourses which must be taken in a controlled sequence. Most of the curriculum is open to the general college student, but some courses are limited to cadets. A student who wants cadet status must follow cadet regulations, be physically fit, not be a conscientious objector, and not have any court convictions.

The Two-Year Program

The ROTC curriculum normally spans five years; it can be completed in three or four and a half by corps using two years’ coursework into one year, or two semesters’ coursework into one semester, with approval of the Department head. The program also can be completed in two years, if the student attends a six-weeks’ summer training camp at a military installation before beginning the last two years of the regular ROTC curriculum. No University credit is given for summer camp attendance. Priority for summer camp assignment is given by the A-try-to community college students, and by the Air Force to Pilot or navigator candidates. Students interested in the two-year program should consult the appropriate department at least two and a half years before their University graduation.

Service Commitment

ROTC is completely voluntary. There is no commitment to enter the military services until enrollment in the first semester of the third year. University rules apply for enrolling, adding and dropping ROTC courses. The first two years of ROTC at Iowa or the basic summer camp are a “free” look at the Army or the Air Force. Entry into the last two years of ROTC’s competitive and entails a commitment to serve two years as an Army officer or four years as an Air Force officer. Cadets taking Army or Air Force flight training scour additional one-year commitment. All recipients of ROTC scholarships accept a four-year commitment.

Advanced Placement

Service veterans and men with other ROTC experience can get full credit towards commissioning (not graduation) for some ROTC courses by providing proof of this background to the appropriate Department head.

Financial Assistance

ROTC scholarships provide tuition, books, laboratory fees and a $100 per-month tax-free subsistence allowance are available to high school seniors, ROTC cadets and qualified two-year program applicants. (See “Scholarships and Loans.”) All cadets in the last two years of ROTC receive $100 monthly as a tax-free subsistence allowance. Students attending the summer camps are paid while there and receive travel expense. Uniforms and books for classes taught by military faculty are furnished, and a $100 uniform allowance is provided for commissioning.

Cadets using National Defense Education Act loans have 12.5 percent of the loan canceled for each of the first five years of commissioning active duty service.

Commissioning

Cadets are commissioned as second lieutenants when they successfully complete ROTC and receive their baccalaureate degree. Normally, they report to active duty shortly after commissioning. Officers who wish to obtain a graduate degree may delay reporting to active duty for that purpose. Cadets or officers who are accepted in the colleges of Medicine or Dentistry can com-
ple their education and go on active duty as doctors or dentists. Cadets who pass a state bar examination can apply for a commission in the Judge Advocate General Corps. Doctors, dentists and JAG officers enter active duty as captains.

Graduates Programs
ROTC does not have a graduate program; however, graduate students can enter the two-year program and receive financial benefits except scholarships.

Special Activities
The military departments sponsor several special activities which contribute to cadet and university life. The Pershing Rifles, Black Berets and Arnold Air Society are military fraternal organizations engaged in military inter-collegiate competitions and service activities. The Co-oodlers and Angel Flight are women's organizations auxiliary to Pershing Rifles and Arnold Society and participate with them in many activities. The departments also sponsor a small-bore rifle club.

ROTC cadets compete for individual national and local awards presented for outstanding achievement in leadership, academics, citizenship, athletics and military proficiency. These awards are formally presented at appropriate ceremonies. (See "Awards, Honors and Prizes").

The departments sponsor ceremonial and social activities throughout the year. The primary ones are the Military Ball, Joint Awards Ceremony and Governor's Day.

Aerospace Military Studies
Department Head: LtCol. Raymond B. Mintz

The normal sequence of courses required for successful completion of the Air Force ROTC program includes courses from other departments in communication skills, history and political science. Variations in the program outlined below may be approved by the Department head.

First Year
23-11 Aerospace Military Studies 1
23-96-97 AFROTC Training 0
10.1, 2 or 3 Rhetoric Skills 4

Second Year
30.13 Introduction to World Politics 4
23-96-97 AFROTC Training 0
23-31 Aerospace Military Studies 1

Cadets who pass qualification tests and are selected on a competitive basis attend summer field training session between third and fourth years. Those successfully completing field training may continue into last two years of Air Force ROTC.

Third Year
23-81 Growth and Development of Aerospace 3
23-96-97 AFROTC Training 0

Third-year cadets required to take one of select group of 100-level history or political science courses during second semester.

Fourth Year
23-83-84 Air Force Leadership and Management 6
23-96-97 AFROTC Training 0
23-50 Flight Instruction 2

Flight ground school course requires for fourth-year cadets in flight instruction program.

Special Facilities and Equipment
Throughout the academic year, classroom instruction is supplemented with one- or two-day visits to air force bases. Most cadets have the opportunity to make at least one visit each semester. Travel is generally by Air Force aircraft flown by AFROTC instructors. Briefings and tours by base personnel with further explanation by the AFROTC instructor who accompanies each group give added dimension to these trips.

Faculty
All Air Force ROTC instructors are professional Air Force officers who are assigned for a three-year tour of duty with the Air Force. They are primarily stationed at major command headquarters or bases. In the United States, the majority of these instructors have previous military service. In the United States, the majority of these instructors have previous military service. In the United States, the majority of these instructors have previous military service. In the United States, the majority of these instructors have previous military service.

Unique Program Assets
Before a cadet begins his junior year of Air Force ROTC, the Military Science curriculum, which includes courses in cadet orientation, survival training, junior officer training, aircraft and crew equipment, physical training, organization and function of the Air Force basic, career orientation, small arms familiarization and first aid.

Staff: AS-100 and AS-200 and flight program instructor Major Collett; commandant of cadets and AS-400 instructor Captain Brown, AS-300 instructor Captain Wocherich.

Military Science
Department Head: Colonel Robert S. Kohl

Variations in the following normal military science curriculum may be permitted by the Department head. Only cadets may take courses above 23-90.

First Year
24-10-20 Fundamentals of Leadership and Management 3
23-96-99 Leadership Laboratory 0

Second Year
23-34-44 Applied Leadership and Management 4
23-98-99 Leadership Laboratory 0
Cadets passing qualification tests and selected on a competitive basis may enter advanced courses:

**Third Year**
- 2345-86 Advanced Leadership and Management
- 2359-99 Leadership Laboratory

Between third and fourth years all cadets attend six-week summer camp or nine-week ranger school and may volunteer for three-week parachuting school; participants paid approximately $600 or $650 and travel expenses.

**Fourth Year**
- 2397-88 Theory and Dynamics of the Military Team
- 2399-99 Leadership Laboratory

Cadets in advanced course must take at least one course in Department of History or Department of Political Science; qualified fourth-year cadets may volunteer for 2395 Army Flight Instruction.

**Special Courses**

The military science faculty conducts seminars for cadets as arranged (for no credit) on such military subjects as advanced map utilization, mortar and artillery fire direction, communications, physical training, orientation, large unit tactics, war gaming, racial problems in the military, chemical and nuclear weapons employment, field sanitation, cold weather survival techniques and mine warfare.

**Special Facilities and Equipment**

The Department utilizes the Cogsville Reserve Training Area, two farms near Iowa City, and Pella Park for practical field problems. A variety of military equipment such as helicopters, PM radios and mortars is used in the practical leadership exercises and to support the Pershing Rifles.

**Faculty**

All faculty members are Army officers who were nominated to and accepted by the University prior to assignment. All have at least five years of commissioned service and are among the top third of all Army officers. They average two years of command experience, one a half years of combat experience, one a half years of teaching experience and one and a half years of postgraduate professional education, and are qualified in at least one military technical specialty area.

**Unique Program Aspects**

The Department annually conducts an all-day field exercise in the fall and a six-hour command post exercise in the spring. Military equipment is used in both exercises.

Staff: commandant of cadets Lt. Col. Collins (field artillery); chief instructor of advanced course Maj. Brook (infantry); advanced course instructors Maj. Prall (corps of engineers), Capt. Mitchell (army); chief instructor of basic course Capt. Jackson (infantry); basic course instructor Capt. Komar (field artillery).

**Aerospace Military Studies Courses**

**General Military Education Program**

**Freshman Year**
- 23AA1 The United States Air Force
- 23AA2 History of the United States

**Sophomore Year**
- 23AA3 U.S. Defense Policy

**Junior Year**
- 23AA4 The Professional Officer

**Senior Year**
- 23AA5 The Professional Officer

**Professional Officer Course Program**

**Reserve Officers Training Corps (ROTC)**

**Military Science Courses**

**2210 Military Science**

**2220 Military Science**

**2234 Terrain Analysis**

Use of maps and aerial photos in analysis of terrain for military operations, taught jointly with Geology Department, twice taking 2234Reading for 12/19.
Bachelor of Arts Program

Students who major in Russian must meet the general requirements for a degree in Liberal Arts and earn at least 34 semester hours of credit in advanced Russian courses:

41:105-106 Second Year Russian 8 s.h.
41:111-112 Third Year Russian 8 s.h.
41:113 Advanced Composition and Conversation 3 s.h.
41:151 Russian Literature in Translation (1800-1880) 3 s.h.
2 of 41:152 Russian Literature in Translation (1860-1917) 3 s.h.
41:181 Readings in Soviet Literature 3 s.h.
41:171-172 Readings in Russian Literature 6 s.h.
41:191 Russian Civilization 3 s.h.

For a more complete area background, Russian majors are urged to include related courses in economics, geography, history or political science among their elective courses.

The requirements for a minor in Russian can be fulfilled by eight semester hours of second- and third-year Russian.

The major emphasis of the graduate program at Iowa is literary, though improvement and refinement of the students' Russian is not neglected. Graduate students therefore study the development of Russian literature, both as a national phenomenon and as a part of European literature, and are expected to analyze writers' styles, perceive literary devices, recognize literary influences and develop the ability for sound criticism of form, content and language of works in all genres. All Master of Arts degree candidates are responsible for having read the works on the Department's master's reading list of Russian literature.

Candidates for the master's degree must have completed the equivalent of the undergraduate major in Russian. Deficiencies in previous training may be removed by taking appropriate courses.

Candidates for the master's degree are required to complete a minimum of 30 semester hours of graduate work, with or without thesis. This program consists of courses over and above those which constitute an undergraduate major in Russian and should include courses in related fields such as comparative literature, history, philosophy and other languages. Four to eight semester hours may be received for thesis preparation. The candidate must pass a written and oral examination; they must also demonstrate a reading knowledge of either French or German.

The program for the M.A. must include the following courses or their equivalents:

41:113-114 Advanced Composition and Conversation 6 s.h.
41:211-212 19th Century Russian Literature 6 s.h.
41:231 Soviet Literature 3 s.h.
41:249 Proseminar, Research Methods 2 s.h.
41:261 History of the Russian Language 3 s.h.
or
41:263 Old Church Slavonic 3 s.h.

Two seminars and one course in pre-nineteenth century Russian literature.

The Department offers introductory courses in the Russian language for students who have specific language requirements.
There are special reading courses designed to give students from other fields an opportunity to acquire a reading proficiency of Russian in either the social or natural sciences. A second-year scientific Russian course is offered for students in sciences who need to develop reading ability for research purposes.

Some classes are open to University students from all departments and are offered in English. These include survey courses in Russian literature and civilization, readings in Soviet literature and a class on Tolstoy.

Special Activities

Each year the Department presents several guest lecturers and sponsored films. Students sometimes put on Russian plays and belong to Russian Circle, an organization of graduates and undergraduates for social activities. The Department also provides a coffee room where students have the chance to practice speaking and improving their Russian with other members of the Department.

The Language Laboratory

The University Language Laboratory provides facilities for language learning, teaching and research. Equipment in the lab includes standard and short wave radios, tape recorders, record players, soundproof recording rooms and drill rooms. An electronic classroom, a soundproof workroom and a library of tape and disc recordings are also available.

Study Abroad

Students who wish to broaden their education through study abroad are encouraged to do so. The Department assists qualified students in selecting foreign study programs and institutions best suited to their educational objectives. Frequently, students from Iowa have studied at a summer language institute in Munich, Germany, where an Iowa faculty member is on the staff.

The Honors Program

Russian majors of junior or senior standing with a grade-point average of at least 3.0 both in Russian and overall may enroll in the Honors Program in Russian. An extensive reading program with discussions, regular reports and a seminar paper comprise each work unit of two semester hours. Students may take up to eight semester hours of Honors in Russian. A comprehensive examination is given in the senior year.

Staff: professor Scribner, Luxembourg; assistant professor Weber; instructors Parrott, Gofeld

Courses for Undergraduates and Graduates

41101 Elementary Russian 4 s.h.
41102 Elementary Russian 4 s.h.
41103 Second-Year Scientific Russian 4 s.h.
41105 Second-Year Russian 4 s.h.
41106 Second-Year Russian 4 s.h.

Courses Primarily for Graduates

41201 19th-Century Russian Literature 3 s.h.
41202 Old Russian Literature 3 s.h.
41203 18th-Century Russian Literature 3 s.h.
41204 Contemporary Literature 3 s.h.
41205 Russian Drama 3 s.h.
41206 Russian History 3 s.h.
41207 Russian Art 3 s.h.
41208 Russian History 3 s.h.
41301 Seminars: Stages, Marxism 2 or 3 s.h.
41302 Seminars: Tolstoy 2 s.h.
41303 Seminars: Pushkin 2 s.h.
41304 Seminars: 20th-Century Literature 2 s.h.
41305 Seminar: Twentieth-Century Literature 2 s.h.
41306 Seminar: English-Language Literature 2 s.h.
41307 Seminar: Drama 2 s.h.
41308 History of the Russian Language 3 s.h.
41309 Old Church Slavonic 3 s.h.
41310 Special Work 3 s.h.
41311 Reader's Thesis 6 s.h.

Science Education

Coordinators: Robert E. Fage

The fundamental purpose of the various plans of study in science education is to improve science teaching by strengthening the content backgrounds and professional competence of the students enrolled. There is concern for science instruction at all
Comprehensive written examinations are required in all three master's programs. The written examination consists of examinations in the fields in which the candidate has distributed his work. These are intended to be comprehensive examinations and are submitted by staff members from the fields in which the candidate is concentrating his work. An oral examination may be required by the examining committee. For those persons in the thesis program, an oral defense of the thesis must be scheduled and approved by three members of the graduate faculty.

Specialist Degree

The Ed.S. is an intermediate degree between the master's and the Ph.D. programs. It is recommended for supervisors (state, regional, or local) as well as for instructors in community colleges and/or small four-year liberal arts colleges. The degree consists of 60 semester hours of work beyond the bachelor's degree, of which 28 semester hours are in supportive sciences, 10 semester hours in related fields and 22 semester hours in science education, including research and internship credits. The comprehensive consists of a three-hour examination in a science area, a three-hour examination in a supporting field and a three-hour examination in science education. The graduate committee must be composed of the science education adviser, a professor from a science area, a professor from a related area and a professor from a second science area or from science education. An oral defense of the graduate project must be scheduled and approved by three professors from the graduate faculty.

The Doctor of Philosophy Degree

The candidate for the Ph.D. in science education is expected to have demonstrated ability in scientific or educational research by the completion of a master's thesis. Previous teaching experience is assumed for all students and additional teaching experience is generally incorporated into the degree program. The student should have a general knowledge of the fundamentals of at least one science area, as evidenced by the completion of a significant component of the master's degree. Each candidate will have at least the equivalent of a master's degree in education as well as in one area of science. Both educational and scientific research competencies are to be demonstrated by a study which could result in a publication. The Ph.D. dissertation will be a scholarly work which will be the culmination of the candidate's principal research effort. Minimum requirements beyond the master's degree include:

- Twenty-eight semester hours in the following areas: biological sciences, physical sciences or earth sciences; should not emphasize the same area as that of the past training of the candidate, unless the candidate is preparing himself or herself specifically for college teaching in one field in science
- Sixteen semester hours in another field of science: botany, chemistry, geology, mathematics, physics, astronomy, zoology, archeology, history and philosophy of science, radiation research, physiology, microbiology
- Two semester hours of special research in science
- Twenty-eight semester hours of education, including science education and educational research
There are no specific tool requirements such as foreign languages; however, the student and adviser plan a program to provide competency in educational statistics and computer programming. The comprehensive examinations consist of a four-hour examination in science education, a three-hour examination in a major area of science and a three-hour examination in a minor area of science.

Financial Aid

Provision is made for advanced graduate students in science education to serve as laboratory instructors in some University science courses and as instructors in the College of Education. Several research and teaching assistantships are offered in the field of science education. These are in addition to financial aid available to University students generally (see "Scholarships and Loans" and "Graduate College").

Staff: Professor Young; associate professors Cowman, Phillips; assistant professors Townsend, Sharp

Advisory Committee: Hubbsy (Botany), Duke (Chemistry), Glenister (Geology), Van Allen (Physics and Astronomy), Jones (College of Education), Stahl (College of Liberal Arts), Young (General Science Program)

Courses

Specialization in science education are described in the College of Education, 72 and 75 catalogs. The following general science courses may also be included in the program.

57:103 Laboratory and Field Study in Earth Science or. or.
57:104 Laboratory and Field Study in Geology or. or.
57:123 Laboratory Study in Biological Science or. or.
57:124 Special study for science educators in modern theories of educational psychology, research and control made of new materials in Biological Sciences Curriculum Study
57:126 Laboratory Techniques in Biology or. or.
57:128 Special laboratory programs, including selections, cultures and organizations
57:155 Concepts in Contemporary Physics or. or.
57:156 Concepts in Contemporary Chemistry or. or.
57:158 Concepts in Contemporary Physics or. or.
57:164 Concepts in Contemporary Chemistry or. or.
57:210 History of Science 2 or. or.
57:214 History of Science 2 or. or.
57:300 Physics for Education or. or.
57:301 Chemistry for Education or. or.
57:304 Science for Education or. or.
57:384 Field Specimen Study in Earth Science or. or.
57:390 Problems in Teaching Material in Science or. or.
57:402 Teaching Science 2 or. or.
57:403 Problems in Teaching Environmental Science 3 or. or.
57:410 Problems in Teaching Environmental Science 3 or. or.

Social Studies Education

Chairmen: W. E. Naves, Degrees offered: B.A., B.A., M.A., Ph.D.

Undergraduate Program

The major in social studies introduces the student to social science on our campus. Standing by itself, it is a broad, interdisciplinary, nondegree program that offers an excellent foundation for careers in law, social work, religion, urban planning and development, and government service at all levels. Graduates of the program are eligible for admission to graduate schools.

The program's major purpose, however, is to provide a broad yet comprehensive education for those preparing to teach in secondary education. Together with the professional requirements for certification, this major meets the standards established by the North Central Association of Colleges and Secondary Schools.

There is a good deal of flexibility in the program and, in consultation with an adviser, it can be tailored to the needs and interests of the individual student. All of the coursework is taken within the seven cooperating departments: Anthropology, Economics, Geography, History, Political Science, Psychology and Sociology.

The B.A. in Social Studies consists of a total of 52 semester hours distributed as follows: twelve semester hours in history, including a minimum of eight semester hours in the history of the United States; eight semester hours each in the Departments of Economics, Political Science, Sociology and Geography; and eight semester hours of elective work which may be done in anthropology or psychology or may be distributed among one or more of the seven departments.
Students pursuing a social studies major will be engaged in survey courses introducing them to the various social sciences. But many of the departments offer independent study and reading assignments as formal classes. There is no separate Honors Program in social studies. Students who qualify are encouraged to do their Honors work in the social science department. In which they wish to concentrate their work.

Admission Requirements
Students wishing to major in social studies must have the permission of an advisor. Transfer students must have earned a minimum grade-point average of 2.5 on all work done in the subjects of the seven cooperating departments in order to be admitted to the program. Approval of confidecy for the bachelor's degree will be granted only to students who have a 2.5 grade-point average in all college work undertaken in the cooperating departments.

Graduate Programs

Master of Arts

The inter-disciplinary nature of the Master of Arts in Social Studies Education degree is of special interest to classroom teachers in secondary education, to instructors in junior and community colleges, and to educators wishing to concentrate in social studies curriculum and instruction. Graduates of this program are at work as classroom teachers and chairmen of social studies departments in junior and senior high schools. Some are serving as curriculum consultants for school districts, while others are staff members in community colleges. A few have found the degree excellent preparation for their professional work in various correctional and penal institutions. For a small number the master's program has provided access to civil service positions at various levels of government.

In the master's program the candidate may elect to take the degree with or without thesis. A minimum of 38 semester hours is required under either plan. These 38 semester hours may be distributed in one of two ways.

In Plan A the candidate does his or her work in three of the seven cooperating departments: Anthropology, Economics, Geography, History, Political Science, Psychology and Sociology. A minimum of 10 semester hours is required in each of the three fields chosen. The remaining eight semester hours may be taken in one of the three fields or distributed among them.

In Plan B the candidate does his or her work in two of the cooperating social science departments and in courses offered by the College of Education. Under this plan the student takes a minimum of 10 semester hours in each of the two social sciences he or she has chosen, and a maximum of 10 semester hours in education. The remaining eight semester hours may be taken in one of the social science fields or be distributed between them.

Under either plan, a minimum of nine semester hours must be taken in graduate courses bearing a number of 200 or over. It is intended that at least one such course be taken in each of the three fields included in the program.

Comprehensive written and oral examinations are required of the candidate. The written portion consists of a six-hour examination over the fields in which the candidate has distributed his or her work. These are intended to be comprehensive, not course examinations, and are submitted by staff members from the fields in which the candidate is concentrating. The oral portion is conducted by the candidate's committee as a whole.

Doctor of Philosophy

Graduates with a doctorate in social studies education can be found in a variety of professional settings. Some have gone into administration in institutions of higher education and are serving as presidents, provosts or deans of faculty or graduate schools. Some are department chairmen in colleges of education or curriculum directors in large school districts. Many are engaged in school education programs in colleges and universities. Quite a few are college instructors in their areas of academic concentration.

As is true of the bachelor's and master's degrees, the doctorate is an interdisciplinary program administered through the College of Education. The emphasis is on broad and thorough grounding in two of the academic areas chosen from history and the social sciences, and specialization in one area of professional education.

The doctorate consists of a minimum of 90 semester hours of coursework and dissertation credit beyond the bachelor's degree and exclusive of tool requirements established by the College of Education. These credits are to be distributed among two of the cooperating disciplines—anthropology, economics, geography, history, political science, psychology and sociology—and in the field of professional education. Depending upon the background and needs of the candidate, work in the two disciplines chosen will consist of between 60 and 75 percent of the 90-semester hours work in education, between 25 and 40 percent of the total.

Depending upon the areas of study chosen by the candidate, there will be opportunity for regular class work, small group instruction, internship, independent study, field work, and laboratory and computer experience. Seminar and advanced work in courses numbered 600 or above is required in each of the three areas chosen for study.

After most of the coursework has been completed, a qualifying examination of approximately nine hours—three hours in each of the fields chosen for study—is required. When the dissertation has been completed, an oral examination in its defense will be conducted by the candidate's committee as a whole.

The research problem may be in either of the two academic...
Social Work

Fields chosen for study, or it may be related to social studies education.

Admission Requirements
Candidates for the doctorate in social studies education must have completed a bachelor's degree in history or one or more of the social sciences at an accredited institution. A master's degree in history, a social science or education is also required. It is expected that performance on the Graduate Record Examination be satisfactory, and that the academic record of the candidate give promise of scholarly success.

Special Facilities
The cooperating departments and the College of Education are recognized as strong academic divisions, and candidates in social studies education have access to departmental and College staff and facilities. Special agencies and services are also available, such as the University Hospital School, the Iowa Center for Education in Politics, the Bureau of Educational Research, the Institute of Public Affairs, the Iowa Educational Information Center, the Curriculum Laboratory, the Statistical Laboratory, the Reading Clinic and other facilities.

The faculty members who serve as social studies education advisers and coordinators are experienced classroom teachers whose advanced degrees have been earned in history, the social sciences and education. All are active in professional organizations, in consultative work and in working with schools in curricular revision.

Staff: Professor Haefner; Associate Professor Fliech; Assistant Professor Olmo

The Committee on Social Studies Education consists of the chairman of the cooperating departments—Anthropology, Economics, Geography, History, Political Science, Psychology and Sociology—or their designated representatives.

Course Descriptions
Coursework undertaken for social studies degree courses includes breadth of offerings in examining the social—anthropology, economics, geography, history, political science, psychology and sociology—and the College of Education. However, requirements for advanced degrees are encouraged to total one or more courses listed in the area of social studies education.

M.S.21 Individual Instruction in Social Studies Education or, for individualized majors, field studies and individual program; focus in history and social science or in problems of professional education; may be repeated with prior approval of instructor.

M.A.21 Social Studies Education or, for individualized majors, field studies and individual program; focus in history and social science or in problems of professional education; may be repeated with prior approval of instructor.

Reading and discussion on significant developments in history, social science and social science education; supervision of research; examination paper required; permission of the instructor

Social studies staff members also teach courses in College of Education

Social Work

Acting Director of School Ralph E. Anderson

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

Social work practice is characterized by variety. Most positions involve working with individuals, groups, organizations and communities, with wide differences in mixture and emphasis.

Likewise, the scope of practice is quite varied. All levels of government, from local to international, employ social workers, as do a range of nongovernmental agencies. Social work practice is found in settings where the function is predominantly social work service and also in settings where the central function is mainly other than social work (e.g., medicine or education). There is also some private practice.

The School is affiliated with the graduate and undergraduate sections of the Council on Social Work Education, and is approved by the Council's Commission on Accreditation.

Undergraduate Program
The undergraduate program in social work is primarily intended to provide a broad general education along with basic preparation for those desiring to enter social work practice directly. Several groups of student goals are encompassed—employment in the social welfare field (where the B.A. degree is sufficient for entrance into such fields as public welfare, family and children's services, corrections, certain group-serving organizations), providing a base for graduate study especially in social work; providing knowledge for employment in allied helping professions; and broad preparation for informed citizenship activities. The program is a four-year course of study. With the exception of the social service courses taught by the social work faculty, it consists of regular courses in other departments of the University.

Advisory Service
The student may declare the major in social work when enrolling as a freshman or at any later time when completion of the major remains feasible. This declaration should be made to the Liberal Arts Advisory Office, whereupon the student will be assigned to an undergraduate adviser on the faculty of the School of Social Work.

Honors in Social Work
The School of Social Work has an Honors Program leading to a Bachelor of Arts with Honors in Social Work. Students interested in such a program should contact the School of Social Work.

Requirements
Undergraduate students majoring in social work must satisfy the general College of Liberal Arts basic skills, core and foreign language requirements, excluding the social science core. The following courses are required for the major:

- 30:001 Introduction to American Politics or 30:100
- 31:1 Elementary Psychology or 31:3 General Psychology
- 34:1 Introduction to Sociology: Principles
- 6E:1 Principles of Economics or 6E:2 or 6E:106
- 42:171 Social Welfare Policy I
- 42:176 Introduction to Social Work Methods
- 42:193 Field Experience

1 s.h.
4 s.h.
4 s.h.
4 s.h.
4 s.h.
4 s.h.
4 s.h.
4 s.h.
3 s.h.
A minimum of 15 semester hours of coursework is required in one department from the 12 listed below. Most students select either sociology or psychology for this purpose. One of the above specifically required social science courses can be applied toward this requirement if the choice for the 15 hours is in a department of the social sciences. At least six hours are required from one or more departments in the other group.

A. Social Science
   Economics
   Geography
   Political Science
   Psychology
   Sociology
   Anthropology

B. Humanities
   American Civilization
   English
   European Literature and Thought
   History
   Philosophy
   Religion

For most students majoring in social work, there is considerable room for electives in social work as well as in other departments. In making these selections, students can contact the School of Social Work for a list of recommended courses.

The following electives are offered in social work:

42:062 Elementary Statistical Concepts 3 s.h.
42:131 Human Behavior in the Social Environment 4 s.h.
42:132 Human Behavior in the Social Environment II 3 s.h.
42:191 Individual Study I arr. 1-3
42:192 Honors in Social Work arr. 2-3

Graduate Program

The primary objective of the School is to have each student achieve a foundation for entering and growing in professional service. Students are expected to master basic knowledge and skill underlying the profession and become self-reliant practitioners able to assume responsibility for their continued education throughout a lifetime. This implies a sensitivity and responsiveness to changes occurring in our world, and particularly to the conditions arising from these changes in both their personal and social aspects. The School emphasizes the diversity of role performance of the social worker and the common and differential use of knowledge. It recognizes that social work practice requires competency in working with individuals, groups and communities.

The School has several distinguishing characteristics. It is one of a limited number of schools which has a 16-month program encompassing the summer months. Each student is assigned to a single practicum base which takes place within the context of the community with teaching-learning experiences drawn from a wide range of resources in that community. A student's practicum base may be in one of the community agencies or in a Training Center, located in one of three geographical areas, and administered by the School through its own faculty members. Individualization of students' needs and interests is provided through the choices available in the development of his or her educational program as he or she fulfills the basic requirements of the School and through provision for electives within the School and the University.

The student begins the program late in August and completes it in late December of the second year. All students are on the Iowa City campus during the first semester of the first year, spending full time in classroom courses. Beginning the spring semester of the first year and continuing until late October of the final semester, the student is in the practicum and has concurrent classroom courses. The latter part of that semester is used for completion of the comprehensive requirements and coursework. Educational Centers are maintained in Iowa City and Des Moines. After the fall semester of the first year, classes meet in these Centers and each student attends one quarter of his or her practicum placement requirement.

The graduate curriculum is organized into four interdependent sequences of courses: Social Work Practice, Social Welfare Policy, Human Behavior in the Social Environment, and Practice. All students take courses in each of the sequences, and each student selects areas for special study. A program of study is organized to meet the requirements of the School and to accommodate the educational goals of the individual student. A student may be waivered out of required courses by satisfactorily completing the testing procedures administered by the respective course instructors. Required courses are indicated in the course descriptions by an asterisk. The research requirement, in addition to the basic course, is met through a seminar in social work research, participation in ongoing research or completion of an individual or group research project. In addition, during the second year students are required to complete at least one unit in each of the following human systems: individual, family, group, organization and community.

Requirements

A minimum of 52 semester hours of credit* is required in graduate courses approved by the School with:

- At least 24 of the semester hours earned in residence at The University of Iowa;
- A minimum cumulative grade-point average of 2.50 on a 4.0 scale;
- Satisfactory completion of all required coursework, including the research requirement;
- No credits by correspondence; and
- A final comprehensive requirement in the second year of study.

Upon faculty recommendation, a student who has completed a clear equivalent of part or parts of the M.S.W. program during the junior and senior undergraduate years may be permitted to qualify for the degree with less than 51 semester hours of graduate credit, but in no way with less than 40 hours. Any student who may wish to omit a specific course can, upon written request, have opportunity for a precourse examination.

Admission

Applications for admission are accepted after October 1 for entrance the following August, which is the only starting time for the full M.S.W. program. Early application is necessary; admissions may have to be closed shortly after January 1.
Courses Primarily for Undergraduates

42302 Elementary Statistical Concepts  3 a.h.
Rationale and use of various descriptive statistical models, including measures of central tendency, variability and correlation; introduction to selected inferential statistical concepts and social research

42105 The Field of Social Work  4 a.h.
Social welfare as social institution; historical development; settings of social work practice; profession of social work; scope of Sociology 34-098

41760 Intro to Social Work Methods  4 a.h.
Practices of social current used by social workers with individuals, groups and communities; philosophy and principles fundamental to social work practice; perspectives 42-146; skills concurrently with 42-189, acceptance with consent of instructor

42181 Individual Study  4 a.h. or arr.
Project related to student's interest carried out under direction of faculty member, supervised by instructor

42183 Hours in Social Work  4 a.h. or arr.
Supervised individual research; prerequisite admissions to Junior Program in social work

42183 Field Experience  3 a.h.
Supervised observation and experience with activities of selected social welfare agencies and organizations; requires approximately 20 hours in agency participation, plus conference or seminar time; prerequisite 42-146; takes concurrently with 42-189, acceptance with consent of instructor

Courses for Graduates

42311* Human Behavior in the Social Environment I  4 a.h. or arr.
In-depth, comprehensive teaching of human behaviors to understanding human groups and organizations, system frameworks used to organize course content; changing character of social work practice; analysis, evaluation and application of social systems; processes of personality growth, developmental tasks and modes of adaptation

42322 Human Behavior in the Social Environment II  3 a.h. or arr.
Behavior and social norms; situation and reliability of adaptive responses to these strains, within social systems course; success and malfunction of social dysfunction; assessment approach to evaluation of some functioning

42171* Social Welfare Policy I  4 a.h. or arr.
Introduction to social welfare policy and social problem area; legislature of social policy, social policy formulation, social welfare policy and social problems

Courses Primarily for Graduates

42151 Social Work Research and Evaluation  3 a.h.
Considerations of research methods and research process

42161 Seminar on the Family  3 a.h.
Perspectives on marriage and family; changes in family and implications for social work practice

42231 Legal Problems of Social Welfare  3 a.h.
Case study approach to social welfare problems and legal aspects of eliminating social welfare problems

42235, 234 Human Behavior in the Social Environment

Selected Articles A-BIII, IV, or arr.
Selected aspects of knowledge of human development and behavior of individuals, groups and organizations; focus on theoretical approaches to understanding personal, family and social forces which influence patterns of behavior; certain aspects of course content may be deleted for social work students with student's needs and interests, i.e., student in social institution, contemporary views of social dysfunction, uncertainty

24217 Social Work Practice I  4 a.h. or arr.
Skills and responsibilities of social workers; compulsory basis for all social work practice; frame of reference for student's overall social experience

24219 Social Work Practice II  3 a.h. or arr.
Further consideration of common conceptual basis of social work practice special emphasis on specific applications to different social work experiences

24243, 244 Social Work Practice: Selected Articles A-BIII, IV, or arr.
Series covering current and different aspect of social work practice and social work techniques based on personal and social systems; personal-social problems and innovative procedures and techniques, i.e., treatment of families in crisis, social casework, social casework, counseling techniques, etc.

Series designed to include knowledge of legal, political, economic, sociological, historical, political and philosophical aspects of social policy formulations; knowledge of selected social problems and selected welfare programs developed and used as means of study and analysis of social welfare policies and in understanding role of social work in social policy formulation, i.e., economic and political considerations in social policy formulation, community mental health, social policy and family

24282 Social Work Research  3 a.h.
Selected research skills appropriate to participation in social work research; emphasis on formulating researchable questions; research techniques; questions for research; sampling; data collection; analysis, presentation of findings

24283 Projects in Social Work Research  4 a.h. or arr.
Individual or group research projects related to social work or social welfare subject; supervised and directed by student, faculty supervision

24284 Seminar in Social Work Research  2 a.h.
Critical analysis of selected theoretical framework, research methodology and findings of contemporary social work research in circumscribed area; substantive area assigned may vary from year to year

24290 Practicum in Ongoing Research  3 a.h.
Participation in selected aspects of ongoing research project submitted by practicum agency, under social work agency or the School of Social Work under guidance of faculty member; paper describing participation subject for group evaluation

24275, 274 Field Placement in Social Work, I, II  3 a.h. or arr.
Social work practice under instruction of practicum teacher; understanding and use of knowledge and skills required to social work practice; knowledge and skill which differentiate modes of social work intervention; integration of learning from native work experience

24253, 253, 253 Special Projects I, II, III  3 a.h. or arr.
Series designed to meet special needs and interests of students and changing interests of social work profession; different topics selected for each course, groups of students may take one or more courses concurrently or receive similar instruction for their dissertation program

24181 Individual Study  4 a.h. or arr.
Project related to student's interests carried out under direction of faculty member, sometimes including group participation

* Required in the M.S.W. program

Graduate courses in other departments of the University may be reviewed to determine if they meet with approval of School of Social Work. Further information may be obtained from office of the School, 112 Central Administration Building.
Sociology

Department Chairman: James L. Price
Degree offered: B.A., B.S., M.A., Ph.D.

Undergraduate Programs
The undergraduate program provides sociology courses as a means of promoting a liberal arts education. No attempt is made to prepare undergraduate majors for specific careers. However, an undergraduate major in sociology provides three types of direct assistance in career preparation. First, some careers which require no graduate education have as a prerequisite social science knowledge which sociology is especially well equipped to provide; an example of such a career is social science teaching in high school. Second, some careers which require graduate education have traditionally found considerable benefit from an undergraduate major in sociology; social work is an example. Third, teaching and research in sociology in colleges and universities is usually preceded by an undergraduate major in sociology.

Undergraduate majors who are primarily interested in career preparation should plan their programs in joint consultation with the sociology advisor and an adviser representing the career into which entrance is sought.

Undergraduates who are not majoring in sociology commonly take sociology courses in their career preparation. Most of these students come from business administration, elementary education, and nursing. Undergraduate students interested in careers in the physical, biological or social sciences are advised to seek the Bachelor of Science degree. A minimum of 26 semester hours is required within the Department for either degree. In addition, the general requirements of the College of Liberal Arts must be fulfilled.

Both the Bachelor of Science and Bachelor of Arts majors require 341 Introduction to Sociology: Principles, 34.2 Introduction to Sociology: Problems and 34.11 Theory, Research and Statistics. The student should take the two courses in theory, research and statistics as soon as possible to increase his or her capacity to benefit from additional coursework in sociology. Courses for the other 12 hours in sociology may be freely chosen by the student.

Additional requirements for the Bachelor of Science degree include either 22M.2 Mathematical Techniques I and 22M.30 Elementary Functions, or 22C.1 Introduction to Calculus with Functions and 22C.17 Calculating Functions with PL.1; and 226.25 Elementary Probability and Statistics, 22A.23-26 and Calculus I-IV may be substituted for either of the mathematics options by students who have had the equivalent of 22M2 Mathematical Techniques I or 22M.20 Elementary Functions in high school.

In addition to the requirements, all undergraduate majors are advised to take six semester hours in anthropology, economics, geography, political science or psychology, and to include in their programs at least one basic course in history or philosophy. Students who plan to prepare for high school teaching should note that eight hours are required for certification in an allied field.

In most cases, it is advisable to choose departmental electives for a general major, leaving the more specialized courses for graduate study.

Honors students who wish to graduate with Honors must include 34.190 Development of Modern Social Theory and 34.97 Honors Research in their programs. Each candidate for Honors must have an Honors advisor and take an examination at the end of the senior year.

Graduate Programs
The graduate training program in Sociology is career-oriented. Major attention is directed toward the education of professional sociologists, most of whom will teach and do research in colleges and universities.

The Department also provides professional training in the areas of deviance-control. Students interested in this type of professional training enroll in one of two programs, the Master of Arts with concentration in criminology or the Master of Arts with concentration in law enforcement and corrections.

With few exceptions, admission into the graduate program requires a minimum undergraduate grade-point average of 3.0 and a combined score of 1100 on the Graduate Record Examination. (The score of 1.100 refers to the combined scores of the quantitative and verbal sections of the Graduate Record Examination.)

The Master of Arts degree in sociology may be obtained in a 30-hour program with thesis or in a 36-hour program without thesis. With the exception of the thesis, the two programs are essentially the same. The program without thesis is intended for persons who want a terminal degree and for whom a wider range of course content in sociology is appropriate. All candidates for the Master of Arts degree must take 34.201 History of Sociological Theory, 34.202 Sociological Theory, 34.214 Elementary Statistics and Data Analysis, and 34.215 Sampling, Measurement, and Computational Techniques. These four required courses must be passed with a grade of B or better.

The Doctor of Philosophy degree in sociology is awarded to students who have taken approximately 90 hours of work at the graduate level, pass a post-M.A. set of courses in methodology-statistics (34.2/2 Intermediate Statistics and Data Analysis, 34.117 Theory and Research Design, and 34.218 Advanced Statistics and Data Analysis), complete the comprehensive examinations and prepare a dissertation.

All candidates for the Doctor of Philosophy degree are expected to be competent in the basic tools of the sociologist—history, theory, methodology and statistics. In addition, each candidate is examined over one major and one minor area chosen from among the areas currently represented on the faculty. Examples of current areas are social psychology, criminology, neopragmatism, deviant behavior, family, stratification, political sociology, community, organizations and the basic tools. A student's major and minor areas cannot both be in basic tools. A detailed statement of regulations for graduate study is available upon request. Prospective doctoral candidates should carefully examine this statement.

The M.A. with Concentration in Criminology
The Master of Arts degree with concentration in criminology is a 10-semester-hour program with thesis. An internship for
which research credit may be obtained may be arranged during the semester in a correctional institution or agency. Students who are awarded this degree may be eligible for continued work toward the Ph.D. in sociology.

The M.A. program with concentration in criminology provides the student with the latest information regarding the nature of crime and delinquency, their causes and treatment, and with an opportunity to gain insights into some of the problems which will confront him or her in future work. Arrangements have been made to utilize Iowa's penal institutions, training schools and correctional agencies as laboratories for graduate instruction. Persons applying for admission to this program should have the equivalent of an undergraduate major in law enforcement, including a first course in criminology or juvenile delinquency.

These additional courses are required: 34:143-144 Crime and Justice 6 s.h.
Two of the following: 34:142 Probation and Parole 2 s.h.
34:145 American Prison Systems and Their Administration 2 s.h.
34:146 American Police Systems and Their Administration 2 s.h.
34:147 Prevention of Crime and Delinquency 2 s.h.
Two of the following: 34:240 Seminar: Criminological Theories 2 or 3 s.h.
34:241 Seminar: Theory of Criminal Law 2 or 3 s.h.
34:242 Seminar: Sociology of Law 2 or 3 s.h.
34:243 Seminar: History and Theory of Punishment 2 or 3 s.h.

The remainder of the student's program will be composed of courses selected to meet particular needs and goals.

M.A. with Concentration in Law Enforcement and Corrections

Successful completion of this program requires a minimum of 45 graduate credits and a B.S. or B.A. degree in Law Enforcement and Corrections without thesis. Students who obtain this degree will be qualified for a variety of positions in law enforcement and correction. The program provides the student with a broad education in the social and behavioral sciences; knowledge of criminal law and procedure, and the administration of justice; an understanding of the administration and operation of state and local correction agencies and institutions; familiarity with the field of community organization and welfare services; and training and experience in interviewing, counseling, investigation and case recording. The program is founded on the conviction that the sociology can make important contributions in the field of law enforcement; therefore, corrections and sociological orientations are emphasized.

As for the M.A. program with concentration in criminology, arrangements have been made to utilize Iowa's penal institutions, training schools and correctional agencies as laboratories for graduate instruction. To be admitted to the program, the student must have a B.S. or B.A. degree and a minimum grade-point average of 2.75, and must have completed these courses or equivalents:

31:1 Elementary Psychology 1 s.h.
31:163 Abnormal Psychology 1 s.h.
34:1 Introduction to Sociology: Principles 3 s.h.
34:214 Elementary Statistics and Data Analysis 3 s.h.
34:215 Sampling, Measurement and Observational Techniques 3 s.h.
34:120 Principles of Social Psychology 3 s.h.
34:126 Collective Behavior 3 s.h.
34:140 Criminology 3 s.h.
34:141 Juvenile Delinquency 3 s.h.

Special Facilities

The Department maintains IBM unit record machines, electronic calculators and computer terminals for research and teaching activities. Also available for faculty and students are the facilities of the Center for Research in Interpersonal Behavior (CRIB), a data archive unit and the Iowa Urban Community Research Center (UICRC).

CRIB was established in 1968 as a laboratory for research in social psychology. The basic facility is a five-room small groups laboratory complex with audio, videotape and interactive process recording equipment. The data archives unit houses the results of numerous survey studies which are made available for teaching and research purposes to faculty and students.

UICRC was established in 1958 and maintains a research library, data bank and laboratory.

Staff: professor Caldwell, Mullard, Price, Saunders, Stoff, Shannon, Wimstead; associate professors Couch, Pope, Stratton; assistant professors Fox, Kim, Robertson, Wiesling, Woodworth; instructors Krain, Lawler, Sheehan, Effinger, Jacobson, Johnson

Courses for Undergraduates Only

Note: All sociology majors required to take 34:1, 34:2, 34:10 and 34:11

34:1 Introduction to Sociology: Principles 3 s.h.

Instructive approach to analysis and exploration of culture and social organization; may be taken by 34:2 classes may be taken in partial fulfillment of advanced science requirements for 3-4 s.h.

34:10 Social Problems 3 s.h.

Examination of selected problems of sociological interest; may be taken in partial fulfillment of advanced science requirements for 3-4 s.h.

34:21 Sociology of Juvenile Delinquency 3 s.h.

Examination of selected problems of sociological interest; may be taken in partial fulfillment of advanced science requirements for 3-4 s.h.

34:11 Introduction to Research in Sociology 3 s.h.

Two-week intensive introduction to research concepts; theoretical thinking, statement of research problems, data collection; limited to research-oriented programs; may be taken in partial fulfillment of advanced science requirements for 3-4 s.h.

34:20, 11 Theory, Research and Statistics 3 s.h.

Year-long introduction to basic statistical concepts, theoretical thinking, statement of research problems; evaluation of empirical studies in research-oriented programs; may be taken in partial fulfillment of advanced science requirements for 3-4 s.h.

34:10 Honors Seminar 2 s.h.

For undergraduates with superior academic records, selected topics in sociological and methodological issues, preparation to serve as Honors Research 34:10 Honors Research 2 s.h.

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Advanced Courses

Social Theory
34:190 The Development of Modern Social Theory 3 a.h.
Consensus on selected works of major nineteenth-century theorists and several representative contemporary sociologists; recommendation for sociology majors and required for Theory major; prerequisites: 34:1 and junior standing.

34:201 History of Sociological Thought 3 a.h.
Lives of major twentieth and nineteenth-century social thinkers: Marx, Weber, Durkheim, Sorokin, Mead; prerequisite: graduate standing or consent of instructor.

34:202 Sociological Theory 3 a.h.
Contemporary theoretical issues and trends in sociology; nature of theory, place of theory in research and strategy of theory construction; prerequisites: graduate standing or consent of instructor.

34:203 Sociological Thought 3 a.h.
Selected problems in sociological theory (theory of society); prerequisites: 34:201 and 34:202 or consent of instructor; may be repeated.

34:204 Sociology of Knowledge 3 a.h.
Role of ideas, belief systems and ideologies in social life; relationship between ideas and social action as reconstructed sociologically and for non-sociological trends; prerequisite: graduate standing or consent of instructor.

34:205 Seminar; Contemporary Social Theory 3-4 a.h.
Comparison and evaluation of leading contemporary theoretical approaches and systems in light of empirical research studies; prerequisite: graduate standing and consent of instructor.

34:207 Seminar; General Systems Theory 3 a.h.
Relevance of general systems concepts to social science; changing conception of idea of "system"; Parsons, Parsons, Beck; cybernetics and ideas of control, closure, openness, emergentism and internal evolution, problems of structure transformation; other control concepts; general systems model as integrating paradigm for all sciences, as alternative to concepts of social structure and social organization in sociology, and to concepts of interaction and behavior in social psychology; prerequisites: graduate standing or permission of instructor.

Statistics and Methods of Research
34:211 Nonparametric Statistics in Social Research 3 a.h.
Techniques which do not make numerous stringent assumptions about nature of population from which data drawn; emphasis on application to rank-order and classification data in small samples; prerequisites: 34:214 or equivalent.

34:212 Mathematical Sociology 3 a.h.
Review of mathematics as tool to analysis of social systems and survey of current quantitative and basic models; prerequisite: graduate standing and consent of instructor.

34:215 Sampling and Survey Research 3 a.h.
Principles of data collection techniques in social research; emphasis on sampling and statistical procedures; prerequisite: sociological research; prerequisites: 34:214 and 34:216.

34:217 Research Design and Data Analysis 3 a.h.
Theory and methodology of research design; developing and testing causal models, prerequisites: 34:215

34:218 Advanced Statistical and Data Analysis 3 a.h.
Principles of drawing theoretical inferences from data in studies using modern complex measures, study designs and statistical techniques, multivariate analysis involving several variables, measurement and seeking error in data analysis, correlational and simple; prerequisite: graduate standing or consent of instructor, may be repeated.

34:219 Seminar in Research Methods and Data Analysis 3 a.h.
Selected topics; prerequisites: advanced graduate standing and consent of instructor; may be repeated.

Social Psychology
34:190 Principles of Social Psychology 3 a.h.
Basic concepts and principles of social psychology; personality, interpersonal and group processes; prerequisite: 34:1.

34:201 Social Psychology 3 a.h.
Methodology, means and interpretations of studies of social psychology of natural and formal settings and of psychological institution in social life; prerequisites: 34:1.

34:202 Basic Communication 3 a.h.
Problems of conceptualization and measurement of opinion processes; influence of communication, reference groups and organizations, interpersonal relations, personality factors; students in Journalism, 34:154; prerequisites: 34:1.

34:203 Small Group Analysis 3 a.h.
Study of small group as fundamental unit in structure of larger social organizations; emphasis on research interest in its own right; prerequisites: 34:212 and Psychology 34:1 or graduate standing and consent of instructor.

34:207 Social Structure 3 a.h.
Social status, complex behavior, social movements viewed as forms of social change; prerequisites: 34:1.

34:217 Interaction Processes 3 a.h.
Various approaches to study of interpersonal processes in both laboratory and field settings; emphasis placed on group in group in groups in which measurements and analysis of social interactions; prerequisites: 34:1 and 34:10.

34:207 Field Methods in Social Psychology 4 a.h.
Field experiments, quasi-experiments and natural observation techniques; open to advanced undergraduates and graduate students; enrollment by permission of instructor; prerequisites: 34:1 and 34:10.

34:210 Cultural Personality 3 a.h.
Principles of culture and personality; psychological variables in understanding behavior; intercultural and differences and repulsion in personality and socialization; prerequisites: 34:1.

34:211 Group Organization and Leadership 3 a.h.
Principles of group organization and personality; interpersonal relations in small groups, process of group formation and change social functions of leadership; prerequisites: 34:1.

34:215 Contemporary Approaches to Social Psychology 3 a.h.
Review and critical analysis of current theoretical approaches and emphasis of social psychological analysis; prerequisites: 34:1 and Demonstrated standing as major or (in the major) in psychological after students by consent of instructor.

34:216 Behavioral Psychology 3 a.h.
Behavioral psychology; problem of behavior in social psychology; topics in behavioral psychology; prerequisites: advanced graduate standing and consent of instructor; may be repeated.

34:217 Research in Small Groups 3 a.h.
Selected problems; prerequisites: advanced graduate standing and consent of instructor; may be repeated.

34:218 Seminar in Collective Behavior 3 a.h.
Selected problems in study of advanced graduate standing and consent of instructor; may be repeated.

34:219 Statistical Principles of Deviation 3 a.h.
Principles of advanced statistical techniques; determination of factors determining advanced graduate standing and consent of instructor; may be repeated.

34:220 Research Methods in Social Psychology 3 a.h.
Research design and methodology in social psychology; prerequisites: consent of instructor; may be repeated.

Criminology and Penology
34:140 Criminology 3 a.h.
Theories and methods of crime, criminal investigation and prosecution, prevention, correctional treatment and crime prevention; prerequisites: 34:1.
Undergraduate Programs in Spanish

There are two programs for undergraduate majors in Spanish. First- and second-semester courses interrelate the four performance objectives—understanding, speaking, reading and writing—through a four-skills format and a policy of frequently testing these skills. Students thereby acquire broader bases on which to diagnose their strengths and weaknesses. and to calculate and plot their programs in preparation for future work. Third- and fourth-semester courses are conducted on a dual-track basis, allowing students to enroll in sections having either an oral and written orientation or an emphasis on reading, writing and context analysis.

Upper-level courses are scheduled to enable students to arrange their schedules so that they are in complete contact with the language four or more consecutive hours on given days. The undergraduate major in Spanish requires courses beyond the second-year level:

Language
35:27-28 Third-Year Composition and Conversation
35:105 Fourth-Year Composition and Conversation

Literature
35:101 Renaissance and Golden Age Literature
35:102 Modern Spanish Literature
35:103 Contemporary Spanish-American Literature
35:106 Spanish-American Poetry and Literature

Spanish Teaching Minor
The Spanish teaching minor requires 35:27-28, 35:105 and 35-120 Spanish Pronunciation and Diction. Students preparing for certification to teach at the secondary level should elect additional courses in pronunciation and civilization.

Honors in Spanish
Admission to the Honors Program in Spanish requires a 3.0 minimum grade-point average overall and a 3.2 in Spanish. Graduation with honors in Spanish requires six semester hours earned in 35:123-124 Honors Literature, 35:121-122 Honors Language, 35:123-124 Honors Literature, an Honors essay in Spanish and/or an oral discourse in Spanish.

Undergraduate Program in Portuguese
The first-year Portuguese program employs a shared-teaching technique in which sections usually are taught three days a week by one teacher and two by another. This gives students exposure to different teaching techniques, voices and accents in a core-related program which provides a wider base of experience as preparation for future study of the language. The undergraduate major in Portuguese requires 24 semester hours of credit in courses beyond the second-year level.

Offering for Nonmajors
Undergraduate students pursuing Bachelor of Arts or Bachelor of Science degrees in other disciplines may meet part of the College of Liberal Arts language requirement with English-translation reading courses the Department offers.
Spanish and Portuguese

with and a certain degree of distinction, the candidate will not be encouraged to continue preparing for the comprehensive.

Comprehensive examinations are offered during the first four weeks of the fall and spring semesters. Candidates intending to take the examination must apply in writing for departmental approval no later than January 1 for the spring semester examination and no later than May 1 for the fall semester examination.

Special Facilities

The Language Laboratory provides facilities for language learning, teaching, and research. These include standard and short-wave radio, tape recorders, record players, soundproof recording rooms, two drill rooms with 68 dual-channel tape recorders providing a simultaneous master duplicate and student record, an electronic classroom, a sound of work room, 16-mm and 8-mm projection equipment and facilities, and a library of tape and disc recordings. The Department offers to its majors a specific course in Language laboratory procedures. The Department sponsors a regular 20-minute variety program, "Suceso en español" ("Happenings in Spanish"), over University radio station WSBU. The Spanish-Portuguese Players, a group of volunteer student actors, produce dramatic programs in Spanish for students and others in the local area, and on request go to other campuses in the state.

Faculty

Of 16 full-faculty members, nine devote their teaching and research interests primarily to literature. Within this field are represented the analysis and interpretation of the literature of medieval Spain, the Golden Age (sixteenth and seventeenth centuries), the contemporary period, colonial Spanish America, Spanish America of the nineteenth and twentieth centuries (including both the novel and the theater), poetry and fiction), Brazil, and France. Seven of our full-faculty members devote primary research to language teaching methods and preparation of pedagogical materials in Spanish and Portuguese for use by undergraduates and graduate students. Their endeavors produce innovations in methodology and new textual and laboratory materials.

Several of our staff members have held or still hold committee chairmanships in the Modern Language Association and the American Association of Teachers of Spanish and Portuguese. Several have been listed in international directories of scholars. Some also serve on consulting and editorial boards for literary serials and other publications.

Appointments

Teaching, research and laboratory assistants are available to qualified graduate students, as are a number of NDEA Title IV fellowships in Spanish, and University scholarships and fellowships, the latter including four-year teaching-research appointments.

Staff: professor Dowdy-Coppola, Ferandez, Martinez-Banini, Ringo; associate professor Davis, associate professor Daniel, De Melo, Delcan, Douglass, Fernandez-Barron, Jaffers, Serraic; assistant professors Frank, Skinner, instructors Pashkova, Sanzio Laboratory Director: Winston J. Reese

Spanish Courses

Spanish and Portuguese

Primarily for Undergraduates

117

361 Elementary Spanish

4 s.h.

362 Elementary Spanish

1 s.h.

Prerequisite: 361 or equivalent

363 Beginning Conversational Spanish

2-3 s.h.

Cannot be taken to fulfill minimum foreign language requirement

364 Contemporary Latin American Narrative

3 s.h.

Given in English; readings in English, for fulfillment of second-semester foreign-language requirement only; same as 358

3651 Intermediate Spanish

3 s.h.

Prerequisite: 362 or equivalent

3652 Advanced and Conversational Spanish

3 s.h.

May be taken in conjunction with 3511, 3527, 3528; majors should take in conjunction with 3511; cannot be taken to fulfill minimum foreign language requirement

3657 Third-Year Composition and Conversation

4 s.h.

Prerequisite: 3512 or equivalent

3658 Third-Year Composition and Conversation

4 s.h.

Prerequisite: 3527 or equivalent

3659 Reading Spanish

ne cr.

For Ph.D. language requirement and for those desiring reading knowledge, cannot be taken to fulfill minimum foreign language requirement

3663 Special Work

1-3 s.h.

3664 Intensive Elementary Spanish

4 s.h.

For Undergraduates and Graduates

3511 Renaissance and Golden Age Literature

3 s.h.

Prerequisite: 3512 or equivalent

3512 Modern Spanish Literature

3 s.h.

Prerequisite: 3512 or equivalent

3513 Contemporary Spanish-American Fiction

3 s.h.

Prerequisite: 3512 or equivalent

3514 Contemporary Spanish-American Poetry and Drama

3 s.h.

Prerequisite: 3512 or equivalent

3515 Fourth-Year Composition and Conversation

4 s.h.

Prerequisite: 3515 or equivalent

3516 Fourth-Year Composition and Conversation

4 s.h.

Prerequisite: 3522 or equivalent

3519 Upper-Level Composition

3.5 s.h.

For Ph.D. language requirement, concept of Revolution in 19th-century Spanish-American Writings

3510 Contemporary Literature

3 s.h.

3511 Contemporary Latin American Novel and Short Story

3 s.h.

3512 Spanish-American Folklore

1 s.h.

3514 Spanish Civilization

3 s.h.

3515 Hispanic-American Civilization

3 s.h.

3517 Syntax, Lexicology and Composition

3 s.h.

3518 Lexicology and Composition

3 s.h.

3519 Hispanic Literature

3 s.h.

3520 Hispanic Literature

3 s.h.

3521 Hispanic Language

3 s.h.

3522 Hispanic Language

3 s.h.

3523 Introduction to Don Quixote

3 s.h.

Gives in English; open to undergraduate Spanish majors, and to undergraduates and graduates in other disciplines, with permission of instructor

3524 Romance Linguistics

3 s.h.

3530 Methods in High School Modern Foreign Languages

3 s.h.

Prerequisite: 3512 or equivalent; ordinarily offered as Eleusis 75/19

3531 Language Laboratory Procedures

1 s.h.

Same as 9617, 9618 and 3919
Departmental Requirements for the M.A.

- A minimum of 30 semester hours including Introduction to Research or its equivalent.
- A research thesis or, for the nonthesis degree, a graduate seminar in which significant original research is done.
- Successful completion of a six-hour written examination, the scope of which is determined by the candidate’s division and his or her graduate committee.

Departmental Requirements for the M.F.A. in Dramatic Art

- A minimum of 48 semester hours and six semesters in residence.
- Demonstration of outstanding artistic talent and achievement in theatre.

Departmental Requirements for the Ed.S. (for Junior College Teaching)

- A minimum of 60 semester hours, including Introduction to Research, a course in the teaching of speech, an approved seminar and at least 19 semester hours completed in the College of Education’s graduate program in higher education.
- Successful completion of a research report.
- A seminar’s internship in an assigned teaching position.
- Satisfactory performance on a nine-hour written examination over areas of learning agreed upon by the student and his or her graduate committee.
- Successful completion of such additional requirements as are specified by the division of Speech and Dramatic Art in which the student’s work is concentrated.

Departmental Requirements for the Ph.D.

- A minimum of 72 hours of graduate credit, exclusive of research tools and dissertation.
- At least one course, or equivalent, in introduction to research, dramatic theory, rhetorical theory and others as determined by the student in consultation with his or her advisor and graduate committee.
- Successful completion of a qualifying examination and demonstrated competence in one’s research area.
- Substantial scholarly dissertation.

Staff: professors Becker, Bowes, Bryant, Cordier, Heininger, Hitchcock, MacCann, Schall, Seibury, Thayer; professors emeriti Bayard, Gillham, Hirsberger; associate professors Brownstein, Catalano, Krauf, Ochs, Wrinie; masters professor Adams, Andrew, Bradac, Dreyfus, Gutterman, Hall, Kemp, Miller, Slichter, instructor Blythe, instructors Kril, Wockenfuss

Interdivisional Courses

36:23 The Shape of Speech, Voice and Pronunciation 3 s.h.
Phonetics, voice quality, intonation, loudness and timbre, with application to film, broadcasting, public address and dramatic situations

36:67 Oral Interpretation of Literature I 3 s.h.
Introduction to principles and practice of reading literary prose and poetry to audiences, analysis, interpretation, evaluation. Recommended for students in elementary education and English.

36:71 The Art of Communication and Criticism 3 s.h.
Study and application of analytical and critical principles in understanding and appreciation of dramatic works, speeches, films, and radio and television programs.

36:80 Honors in Speech and Dramatic Art 3 s.h. or cr. arr.
Open to seniors and graduate students by permission.

36:91 Oral Interpretation of Literature II 3 s.h.
Critical analysis and oral presentation of more complex works of fiction, mystery, horror, fantasy and science fiction.

Requirements for the Major:

- 36:60 Introduction to Broadcasting (lecture, two semester hours; laboratory, one semester hour)
- 36:51 Survey of Film (lecture, two semester hours; laboratory, one semester hour)
- At least six additional hours of advanced production/performance courses within the division.
- At least six additional hours of advanced historical, critical or behavioral studies in the division.
- Courses in other divisions of the Department as required of all majors.

M.A. or Ph.D. in Broadcasting and Film

The M.A. candidate is expected to offer a plan of study which balances the artistic and scholarly aspects of the broad and/or film fields. The major emphasis of the Ph.D. programs in broadcasting and film is the development of research competence.

For basic requirements, see "Graduate College" and section above on graduate degrees in speech and dramatic art.
Introduction to Research (36:300) 3 s.h.
Courses in theory and criticism 6 s.h.
Courses in theatre history 6 s.h.
Courses in dramatic literature 6 s.h.
Courses in theatrical production 9 s.h.
A thesis or graduate seminar in history, theory or criticism of drama or theatre is required.

M.F.A. in Dramatic Art

Students who demonstrate exceptional ability in playwriting, directing, design, acting or technical direction may apply for admission to the program of study and production leading to the M.F.A. Admission is dependent on recommendations and appropriate demonstrations of ability. Six semesters in residence and 48 semester hours are required, and students must reapply for admission each year. Substantial creative work of high quality is expected of all candidates.

Ph.D. in Dramatic Art

The program for the Ph.D. is made to suit individual backgrounds and requirements. The principal purpose of the program of study and research leading to the Ph.D. degree is to give the candidate a mastery of a major field of learning, including a working command of its significant literature and research methods and of the professional skills appropriate to it.

Courses for Undergraduates

36T:12 Shakespeare 3 s.h.
Sems as English 672
36T:61 Drama in Western Culture 4 s.h.
Sems as core course 1153; required of all dramatic art majors
36T:62 Drama in Western Culture 4 s.h.
Cross-listed with 36T:61; sem as core course 1153; required of all dramatic art majors
36T:61 Modern Drama 5, 4 s.h.
Sems as English 63.5 and 125.4

Courses for Undergraduates and Graduates

One-hour concurrent registration required for all courses marked with asterisk (*).
123 hours of approved production activity for each hour of credit; may be taken independently of regular courses
36T:106 Dramatic Art Laboratory or, 3 s.h.
8.5 Lab. or 8.5 Lab. + 9.5 Lab.
36T:101 Acting I 3 s.h.
Readings, improvisation and some study developing actor's psychological technique; courses to enhance concentration of attention, observation, imagination and memory; development of stage voice
36T:102 Stage Movement 2 s.h.
Basic movement training for actors; development of ease and control of body; structured and improvisational situations
36T:104 Acting Workshop 3 s.h.
Advanced technique and some work; concurrent registration in 36T:102 and 36T:106; permission: 36T:102 and consent of admissions committee
36T:105 Voice Laboratory 1 s.h.
Voice development for stage; open only to students registered in 36T:104
36T:106 Movement Laboratory 1 s.h.
Individual instruction in movement technique and practice; open only to students registered in 36T:104
36T:115 World Styles in Movement 2 s.h.
Department, movement, music and representative dance from Medieval period to present; lecture and physical activity
36T:110 Introduction to Theatrical Design 3 s.h.
Analysis of scripts for theatre designers and technicians; mechanical drawing for scenic design of scenery, costumes, lighting and makeup; prior or concurrent registration in 36T:105 required
Speech and Dramatic Art

3975-21 Seminar: Elizabeth Theatre History
3975-22 Seminar: Theatre History
3975-23 Seminar: Dramatic Literature
3975-24 Seminar: Dramatic Literature: History and Practice
3975-25 Seminar: Dramatic Theory and Criticism
3975-26 Seminar: Experimental Research in Theatre

Rhetoric and Public Address

Professor in Charge: Donald C. Bryant
Degrees offered: B.A., M.A., Ph.D.

The Bachelor of Arts Program

This major is recommended for students preparing for active participation in public affairs or teaching. It is intended to serve as an effective focus for a sound liberal education.

Requirements include at least 24 and no more than 36 semester hours in the Department. The program aims at a reasonable balance between doing and knowing—between courses and extracurricular activities emphasizing informed and guided improvement in oral performance, and courses devoted to theoretical, critical and historical study of the principles and practice of public address, and the interrelation of public address and theatre, film, radio, television and other arts of communication. Further, the student concentrating in public address is expected to pursue substantial study beyond the general graduation requirements of the College of Liberal Arts.

Programs for majors include:

• 36-33 The Basics of Speech: Voice and Punctuation
• One of the following:
  36-39 Public Speaking
  36-39 Group Discussion
• 36-32 Interpersonal Communication
• 36-75 Parliamentary Procedure
• 36-57 or 36-151 Oral Interpretation of Literature
• One of the following:
  36-125 Theory and Practice of Persuasion
  36-129 Theory and Practice of Argumentation
  36-130 Interview and Conference Techniques
• One of the following:
  36-85 Speeches of the Western World
  36-86 Theories of Rhetoric
  36-87 Rhetoric of Agitation and Control
  36-106 Greek and Roman Public Address
  36-131 Contemporary Public Address
  36-134 Group Communication

• Selected courses in drama and theatre, and in radio-TV-film
• At least 15 semester hours beyond the liberal arts graduation requirements in literature, history, psychology, philosophy, foreign language and/or social sciences, including a course in expository or argumentative writing

The Master of Arts Program

The course of study is intended to build a strong foundation for teaching in high schools and junior colleges and/or for proceeding to the doctorate. The program may include the preparation of a thesis, according to the decision of the student and adviser. At programs will include:

• Introduction to Research (368-300); At least 15 hours of courses in rhetoric and public address including a seminar;
• At least six hours of courses in other divisions of this or related departments;
• A course in the bases of speech (voice and phonetics) or evidence of adequate previous training; and
• A comprehensive examination

The Doctor of Philosophy Program

The program leading to the Ph.D. degree is designed to give the candidate a mature grasp of the field of learning and to provide guided experience in research resulting in a significant dissertation.

Courses

3693 Principles of Speech Communication 3 s.h.
Instruction and guided practice in fundamentals of oral communication; satisfies University requirement in speech for students not enrolling in courses 21-3 and 2-103, or equivalent; requirement must be satisfied by non-advanced students at beginning of each semester by passing Rhetoric Program, and for advanced students by passing Speech 369-20 and open for credit to students who had or are taking Rhetoric 21-3 and 2, 203, Speech 369-10 or equivalent

3693B Public Speaking 3 s.h.
Intermediate course in speechmaking—reviewing previous coursework (369-1 and 2, 103, 203 or equivalent) or other experience in basic processes and practice of oral communication,ague review of public concern, study and exercise in more complex forms of expository and persuasive speechmaking; frequent speechmaking, analysis and criticism of speaking and speakers, analysis in needs and results of speaking situations and techniques of delivery

3693C Public Speaking 3 s.h.
Principles and practical application of group problem-solving techniques; leadership and group participation; projects in social decision and action

3693D Instructional Communication 3 s.h.
Readings, speeches and projects in dyadic and small-group analysis; teaching theory and application of personal perception, interpersonal interaction, message analysis, feedback and evaluative interaction

3693E Parliamentary Procedure 3 s.h.
Sales of order for conduct of business in meetings of committees, club, and organizations; opportunity for practice in making and debating motions from floor and in preparing and presenting parliamentary motions

3693F Speeches of the Western World 3 s.h.
Notable speeches of classical Greece and Rome, modern Europe, 17th-18th-century Britain and United States, studied as dynamic events in historical context and as important works of rhetorical art

3693G Theories of Rhetoric 3 s.h.
Examinations of influential theorists of oral and written prose discourse of past and present, including, orientation toward understanding instrumental communication; same as English 693

3693H Rhetoric 3 s.h.
Principles of Agitation and Control

3693I Theories of Rhetoric 3 s.h.
Examination of the influence of theories of oral and written prose discourse of past and present, literature, research, and orientation toward understanding instrumental communication; same as English 694

3693J Rhetoric and Agitation 3 s.h.
Examination of the influence of theories of oral and written prose discourse of past and present, literature, research, and orientation toward understanding instrumental communication; same as English 695

3693K Rhetoric and Agitation 3 s.h.
Examination of the influence of theories of oral and written prose discourse of past and present, literature, research, and orientation toward understanding instrumental communication; same as English 696

3693L Rhetoric and Agitation 3 s.h.
Examination of the influence of theories of oral and written prose discourse of past and present, literature, research, and orientation toward understanding instrumental communication; same as English 697

3693M Rhetoric and Agitation 3 s.h.
Examination of the influence of theories of oral and written prose discourse of past and present, literature, research, and orientation toward understanding instrumental communication; same as English 698

3693N Rhetoric and Agitation 3 s.h.
Examination of the influence of theories of oral and written prose discourse of past and present, literature, research, and orientation toward understanding instrumental communication; same as English 699

3693O Rhetoric and Agitation 3 s.h.
Examination of the influence of theories of oral and written prose discourse of past and present, literature, research, and orientation toward understanding instrumental communication; same as English 700

3693P Rhetoric and Agitation 3 s.h.
Examination of the influence of theories of oral and written prose discourse of past and present, literature, research, and orientation toward understanding instrumental communication; same as English 701

3693Q Rhetoric and Agitation 3 s.h.
Examination of the influence of theories of oral and written prose discourse of past and present, literature, research, and orientation toward understanding instrumental communication; same as English 702

3693R Rhetoric and Agitation 3 s.h.
Examination of the influence of theories of oral and written prose discourse of past and present, literature, research, and orientation toward understanding instrumental communication; same as English 703
Speech Education

Professor in Charge: Hugh F. Seabury
Degree Offered: B.A.

Teaching speech, drama and forensics offers rewards which compare favorably with those in other fields. SAFETY, working conditions and living standards are usually excellent. The demand for well-prepared and qualified teachers of speech, dramatics and forensics in high schools and colleges remains strong. Forensic work in high schools and colleges compensates favorably with the demand for teachers of many other subjects in high schools and colleges.

Students may proceed to the B.A. with emphasis in speech education by electing a minimum of 30 semester hours in the Department as recommended in Plan A, B or C below and a minimum of 20 semester hours in education plus two semester hours in American history or American government. Basic to each of the three plans are the distribution requirements for all majors in the Department plan.

36:53 The Basics of Speech: Voice and Pronunciation 3 s.h.
36:12 Interpersonal Communication 3 s.h.

Plan A. Speech and Dramatic Art Emphasis

36:31 Group Discussion 3 s.h.
36:32 Interpersonal Communication (required) 3 s.h.
36:53 The Basics of Speech: Voice and Pronunciation (required) 3 s.h.
36:57 Oral Interpretation I 3 s.h.
36:60 Communication Theory in Everyday Life (required) 3 s.h.
36:75 Parliamentary Procedure 2 s.h.
36:50 Introduction to Broadcasting 3 s.h.
or
36:51 Survey of Film 3 s.h.
36:100 Dramatic Arts Laboratory 3 s.h.
36:101 Acting I 3 s.h.
36:129 Theory and Practice of Argumentation 3 s.h.
36:140 Directing I 2 s.h.
3:15 Introduction to Speech and Hearing Processes and Disorders 3 s.h.

Plan B. Speech & Drama Emphasis

36:30 Public Speaking 3 s.h.
36:31 Group Discussion 3 s.h.
36:32 Interpersonal Communication (required) 3 s.h.
36:53 The Basics of Speech: Voice and Pronunciation (required) 3 s.h.
36:57 Oral Interpretation of Literature I 3 s.h.
36:60 Communication Theory in Everyday Life (required) 3 s.h.
36:150 Performance Practice 2 s.h.
36:85 Speeches of the Western World 3 s.h.
or
36:132 Selected American Speeches 3 s.h.
36:50 Introduction to Broadcasting 3 s.h.
or
36:51 Survey of Film 3 s.h.
36:107 Educational Forensics 3 s.h.
or
36:110 Speech for Educators 3 s.h.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>36:129</td>
<td>Theory and Practice of Argumentation</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>3:15</td>
<td>Introduction to Speech and Hearing</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>33:165</td>
<td>Process and Disorders</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

**Plan C: Theatre Emphasis**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>36:32</td>
<td>Interpersonal Communication (required)</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>36:63</td>
<td>The Voice: Speech, Voice and Pronunciation</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>36:57</td>
<td>Oral Interpretation of Literature I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>36:110</td>
<td>Introduction to Theatre Design I-III</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>36:101</td>
<td>Acting I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>36:140</td>
<td>Directing I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>36:100</td>
<td>Drama Lab</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>36:149</td>
<td>Children's Theatre and Creative Drama</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>36:50</td>
<td>Introduction to Broadcasting</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>36:51</td>
<td>Survey of Film</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>36:107</td>
<td>Educational Forms</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>or</td>
<td>Speech for Educators</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>3:15</td>
<td>Introduction to Speech and Hearing</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

Students are advised to complete a minimum of 20 semester hours as a minor in English (with some work in dramatic literature), social studies or other tangential fields to strengthen their major, and to accumulate a record of achievement in University forensics, broadcasting and film, and theatre activities.

**Sequential Requirements in Education**

**Statutory American history or American government** 2 s.h.

**Junior Year**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>76:100</td>
<td>Introduction to Secondary Teaching</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>78:91</td>
<td>Pre-Education Practice (PREP)</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>78:75</td>
<td>Educational Psychology and Measurement</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

**Senior Year**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>76:180</td>
<td>Methods: High School Speech</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>76:191-192</td>
<td>Methods and Laboratory Practice in Teaching and Speech in High School</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

For detailed information about teacher certification, see "College of Education."

**Courses**

36:67 *Methods High School Teachers* 3 s.h. Teaching speech, drama, and forensics, considered of various patterns in teaching, remedial programs, objectives, instructional methods and materials, and written and oral evaluation. Small classes and grading of students involved in various activities included. Additional activities and use of materials are included. 78:191:40 required for majors who plan to apply for professional certification in speech.

36:129 *Educational Forensics* 3 s.h. Planning, organizing and evaluating curricular and extracurricular forensics programs in schools; content for teachers for independent study; class meeting on one Saturday per month, during 36:110 *Speech for Educators* 3 s.h. To aid teachers and others interested in teaching relationships between teacher and student, awareness of the student, awareness of self, interaction between teacher and student; maneuver communication, analysis of student's potential in becoming effective teacher. Opportunity for students to sit in an important position of teacher and evaluate. 36:190 *Teaching of Speech* 3 s.h. Principles, practices and problems of teaching speech and drama, orientation to interrelated activities in education, forensics and speech in secondary schools; history of American speech, readings and research. 36:176 Workshop in Teaching Dramatics, Forensics and Speech or, art, methods, materials, curricular aids, investigation and evaluation in teaching and helping students in courses and extracurricular activities; observations of other teachers, research adaptations and practices to teaching; and specific, dramatic art, communication, and radio and television, and individual speech, dramatic, and forensic events, some as Educators. 36:250 Teaching Freshmen Rheesical 2 s.h. Lecture-demonstration course exploring literature and problems involved in teaching composition, public speaking and reading done in English 1010. 36:201 *Foundations of Speech Education* 2 to 4 s.h. Origins, early periods, psychological bases, theories and problems of teaching speech, coherent current, teaching and writing by early contributors to speech education from pre-logan to English education; speech education in works of Aristotle, Quintillian, Plato, St. Augustine, Rassia, English teachers and writers. 36:323 *Modern Speech Education* 2 to 4 s.h. Modern speech education, beginning with works of Rassia and English teachers and social, and ending with contemporary developments in teaching, research and practice in American education. Methods and materials as created for expanding literature and problems related to planning, organizing and evaluating speech program in secondary schools.

**Speech Pathology and Audiology**

**Department Chairman** Kenneth L. Wolf

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

The courses and degree programs of the Department of Speech Pathology and Audiology are planned to meet the needs of students entering the field to prepare for a wide variety of specific opportunities. These include clinical service, college and university teaching, and research concerned with speech, language and hearing processes and disorders. The offerings also include courses for students with vocational and professional goals in other fields, such as psychology, education, voice and dramatized arts, dentistry and medicine, whose preparation may be enriched by the study of speech and hearing processes and their disorders.

Students in this field provide clinical services for persons with speech, hearing or language problems in hospitals, communicative disorders, rehabilitation facilities andelementary and secondary schools; teach in colleges and universities; and/or carry out research in laboratories concerned with communication processes and disorders.

All professional programs of the Department leading to the M.A. degree are accredited by the Education and Training Board of the American Board of Examiners in Speech Pathology and Audiology.

**Undergraduate Curricula**

Since the master's degree or equivalent is the minimum level of preparation for persons seeking professional careers in this
field, the undergraduate curricula leading to B.S. or B.A. degrees in speech and hearing science have as a primary purpose the preparation of students for graduate work. Hence, the under-
graduate program emphasizes the normal processes of speech, 
hearing, and language. These undergraduate programs may be 
taken, of course, by persons who want a degree in the College 
of Liberal Arts but who do not desire a career in this field. 
Students may qualify for either the B.S. degree or the B.A. 
degree with a major in speech and hearing science by complet-
ing, in addition to the general requirements prescribed by the 
College of Liberal Arts, the undergraduate Departmental pro-
gram given below:

Required Departmental Courses
3:15 Introduction to Speech and Hearing Processes and Disorders 3 s.h.
3:20 Phonetics of American English 3 s.h.
3:110 Anatomy of the Speech and Hearing Mechanisms 3 s.h.
3:112 Fundamentals of Speech Science 3 s.h.
3:113 Introduction to Hearing Science 3 s.h.
3:114 Children’s Language Development 3 s.h.
3:117 Introduction to Psycholinguistics or 3 s.h.
103:100 Introduction to Linguistics

Required Courses in Related Areas
29:113 Physics of Sound and Music 3 s.h.
31:143 Statistical Analysis I 3 s.h.
3:11 Elementary Psychology or 4 s.h.
3:13 General Psychology

Minimum of nine semester hours completed by one course 
from Group 1 and one course from Group 2, as listed below, 
and one additional course selected from fields of psychology, 
antropology or sociology

Group 1
5:100 (31:111) Child Development 3 s.h.
5:151 (31:144) Introduction to Child Psychology 4 s.h.

Group 2
31:13 Psychology of Adjustment 3 s.h.
31:105 Personality 3 s.h.
31:163 Abnormal Psychology 3 s.h.

Other Requirements
Students majoring in speech and hearing science must also com-
plete or have had the equivalent of college algebra and trigonom-
etry, college physics dealing with light and sound, and a college 
course in the biological sciences.

Honor Program
The senior year program leading to the B.S. degree with Honors 
in speech pathology and audiology is open to students who at 
the beginning of the senior year have completed at least 10 
semester hours of coursework that can be counted toward 
a major in the Department, and must have earned at least a 3.0 
grade-point average on all major courses and over all. For 
graduation with Honors, the student must complete the require-
ments for a major in this department; complete two semesters of 
study in residence after entering the senior year; Honors pro-
gram: maintain a minimum overall grade-point average of 3.0, 
a minimum grade-point average of 3.0 for all courses in the 
major, and a minimum grade-point average of 3.0 in the required 
six semester hours of Departmental Honors courses for seniors 
(Honors Seminar and Honors Thesis), 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 this depart-
ment by recommendation of the Departmental Honors advisor.

Advanced Degrees in Speech Pathology and 
Audiology

More specific details on the requirements for advanced degrees 
can be obtained by consulting the Graduate College and/or 
contacting the office of the Department of Speech Pathology and 
Audiology.

A graduate student is accepted as a candidate for an advanced 
degree by recommendation of the Departmental staff based upon 
a review of the student’s previous academic record and scores 
on the Aptitude Test of the Graduate Record Examination, if 
available. In certain cases a student may be admitted for gradu-
ate study with acceptance as a degree candidate reserved until 
the student has demonstrated his ability to perform satisfactorily 
in graduate courses during one or more semesters of residence 
at Iowa.

The M.A. program in speech pathology and audiology may 
be a professional program to prepare the student for immediate 
placement in clinical service positions, or it may be a general 
program of graduate study leading to additional study for the 
Ph.D. degree. The various programs for the professional M.A. 
are necessarily specified to ensure that upon graduation the stu-
dent 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 hear-
ing science, development of oral communication and psychology 
of human behavior which is essentially equivalent to an under-
graduate major in this field.

The Ph.D. program provides for comprehensive training for 
the scholar and researcher in speech and hearing processes and 
their disorders and also for more intensive specialization in par-
ticular clinical problems in which the student may have special 
interest.

The full academic load for all regular graduate students is 12 
semester hours of course registration per semester and six semes-
ter hours in summer sessions. In addition, as an integral part of 
the training program all full-time degree candidates are given
part-time professional training assignments of a research, teaching or clinical nature. The assignment for each student in any semester is based on his or her particular professional goals and on the type of activity which contributes most to professional growth and development. Time required for such activities will be approximately 15 hours per week. No registration is required for these training assignments and no academic credit is given. The training assignments are in no way connected with or related to financial assistance.

The Department of Speech Pathology and Audiology cooperates in interdisciplinary doctoral programs with the Program in Applied Mathematical Sciences (see "Graduate College").

Master of Arts Degree
All entering M.A. degree candidates are required to take preliminary comprehensive examinations covering coursework in speech and hearing that is considered prerequisite to graduate study. The results of these examinations are to be considered diagnostic in nature, providing the student and faculty advisor with a basis for developing an appropriate plan of study. These examinations are ordinarily taken during the first semester of residence. Portions of the examinations may be waived if the student chooses to take appropriate courses.

Professional Program
The professional M.A. program is designed to prepare clinicians in speech pathology and audiology who will be fully competent to function independently in a variety of clinical settings. Persons completing a professional M.A. program meet all academic requirements for clinical certification by the American Speech and Hearing Association. Four different curricula are provided. Each includes basic studies listed below under A, the requirements listed under one of the four other sections (B, C, D or E) and electives of the student's choice. The student should choose one of these four curricula in relation to career objectives and interests. A total of 38 semester hours of graduate work is the minimum required for a master's degree in this department. It has been found that students usually require at least three semesters and one summer term to become fully qualified for their career objectives. Candidates for the professional M.A. degree are not required to present a thesis. However, students demonstrating research aptitude and interest are encouraged to do so. All candidates for the professional M.A. degree without thesis are required to take final written comprehensive examinations.

Requirements for the Professional M.A. Degree
A. All Majors

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>*316 Neural Processes of Speech and Language</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>*3120 Clinical Procedures in Speech Pathology and Audiology</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>*3131 Articulation Disorders</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>*2185 Hearing Loss and Audiology</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>3224 Clinical Procedures for Language Habilitation</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>3264 Aural Rehabilitation</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>7C:199 Counseling for Related Professions</td>
<td>2 or 3 s.h.</td>
</tr>
</tbody>
</table>

Two advanced seminars or three

4 s.h.

* Equivalent undergraduate course will be accepted as meeting requirements.

Additional semester hours of practicum registration sufficient to meet supervised, direct clinical experiences required for Certification of Clinical Competence of the American Speech and Hearing Association and to provide broad supervised practicum experience.

B. Speech Pathology, General Clinical Emphasis

Courses listed under A and

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>3183 Stuttering</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>3212 Voice Disorders</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>3225 Neuropathologies of Speech and Language</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>3237 Clinic Palate</td>
<td>2 s.h.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>3183 Stuttering</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>3212 Voice Disorders</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>3225 Neuropathologies of Speech and Language</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>3237 Clinic Palate</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>7E:104 Remedial Methods in Speech and Hearing</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>7E:192 Laboratory Practice in Elementary School</td>
<td>5 s.h.</td>
</tr>
</tbody>
</table>

Practicum, research and elective courses to bring total to at least 38 semester hours.

D. Audiology Major, General Clinical Emphasis

Courses listed under A and

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>3120 Fundamentals of Laboratory Instrumentation</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>3241 Advanced Audiology</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>3243 Conservation of Hearing</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>3245 Hearing Aids</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>3244 Aural Rehabilitation (in addition to A above)</td>
<td>1 s.h.</td>
</tr>
<tr>
<td>3246 Hearing Aid Auditory System</td>
<td>1 s.h.</td>
</tr>
<tr>
<td>7E:104 Remedial Methods in Speech and Hearing</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>7E:192 Laboratory Practice in Elementary School</td>
<td>5 s.h.</td>
</tr>
</tbody>
</table>

Practicum, research and elective courses to bring total to at least 38 semester hours.

E. Audiology Major, School Hearing Clinician

Courses listed under A and

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>3241 Advanced Audiology</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>3243 Conservation of Hearing</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>3245 Hearing Aids</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>3244 Aural Rehabilitation (in addition to A above)</td>
<td>1 s.h.</td>
</tr>
<tr>
<td>7E:104 Remedial Methods in Speech and Hearing</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>7E:192 Laboratory Practice in Elementary School</td>
<td>5 s.h.</td>
</tr>
</tbody>
</table>

Practicum, research and elective courses to bring total to at least 38 semester hours.

Students preparing for clinical positions in public schools must meet the certification requirements of the states in which they plan to work. Completion of the following courses, in addition to those previously listed, will meet the requirements of most states.

American Government or American History | 2 or 3 s.h. |
| Introduction to Elementary Teaching | 2 s.h. |
| Children's Literature | 3 s.h. |
| Educational Psychology and Measurement | 3 s.h. |
| Exceptional Children | 2 or 3 s.h. |
General Program
The M.A. program for the student planning to continue to the Ph.D. degree is individually planned in consultation with the student's advisor. It usually includes a substantial portion of the courses previously listed for the professional M.A. program. Certain of the courses, however, may be omitted, deferred or replaced by other courses when appropriate for the student's plan of study leading to the Ph.D. degree. Students planning to continue to the Ph.D. degree are required to present a thesis as part of the M.A. program and successfully complete a final oral examination.

Doctor of Philosophy Degree
The Ph.D. program is planned to provide the student with the opportunity to attain a comprehensive and thorough knowledge of subject matter both in the area of speech pathology and audiology in general and also in the area of his or her own particular specialization. Consideration is given to special interests and goals whenever possible in arranging the details of the student's Ph.D. program.

The Ph.D. program is usually planned with specialization in speech pathology, audiology, speech science or hearing science. Within each area the candidate and advisor may provide for special emphasis through suitable selection of advanced seminars and research areas. Most students will find that their special interests lie in one or more of the four listed areas. The establishment of prescribed programs for these areas is not intended to circumscribe the graduate curriculum of the Ph.D. candidate who has specialized goals or interests which are not adequately met by these programs. Individual programs designed to meet special interests and goals are encouraged, provided only that the student's purposes are clearly defined and that he or she presents an adequate plan of study for their accomplishment.

Courses beyond those included in the Departmental listings are available, subject to the approval of the candidate, eminence, statistics, physiology, neurology, anatomy and psychology.

The Ph.D. comprehensive examinations are ordinarily taken after approximately two years of graduate study. The examinations are written and oral and include a general review of the student's qualifications and performance in graduate training. Candidates whose earlier training has not included a master's thesis are not eligible to take the comprehensive examinations until they have demonstrated aptitude for research by completing a suitable research project and presenting a paper summarizing its results. This project is to be of a magnitude appropriate for a master's thesis. The Ph.D. candidate must also successfully complete a dissertation based upon original research in the area of specialization.

Recommended Courses
A. All areas of specialization
Courses, or their equivalents, required for M.A. degree and following additional courses:
3:120 Fundamentals of Laboratory Instrumentation
3:220 Advanced Laboratory Instrumentation
3:250 General Experimental Phonetics

3:251 General Experimental Phonetics Laboratory
3:590, 591 or 592 Research
Statistics beyond introductory course
Courses in computer science
Courses in psychology (physiological, learning, motivation, personality)
B. Speech pathology
Courses listed under A and
Seminars in areas of interest
Clinical practicums
C. Audiology
Courses listed under A and
3:254 Psychacoustics
3:255 Psychacoustics Laboratory
3:256 Physiology of Hearing
3:257 The Pathological Auditory System
Seminars in areas of interest
Clinical practicums
D. Speech and language science
Courses listed under A and
3:254 Psychacoustics
3:255 Psychacoustics Laboratory
Seminars in areas of interest
Courses in linguistics and psycholinguistics
Courses in biological and physical sciences and mathematics
E. Hearing science
Courses listed under A and
3:254 Psychacoustics
3:255 Psychacoustics Laboratory
3:256 Physiology of Hearing
3:127 Sensory Processes
Seminars in areas of interest
Courses in biological and physical sciences and mathematics
Students following programs in speech and language science or hearing science are normally expected to register for research credit during each semester of residence
Training Facilities
The student of speech pathology and audiology at The University of Iowa is provided with a broad range of opportunities to acquire experience in both clinical and research areas.

Clinical Facilities
The clinical training program derives great benefit from the fact that Iowa City is the health center of the state and that these health service facilities are located so that they may be fully utilized in the clinical training of students in speech pathology and audiology.

The University of Iowa Speech and Hearing Clinic serves the University and the general public. Included in its services are outpatient evaluations and rehabilitation programs for speech, hearing, and language problems. Included is a six-week summer residential program for children. These clinical programs are planned for the training of students through supervised clinical experience with a wide variety of speech, hearing and language disorders. This training is enhanced by the use of the new and
Course Information

3:1 Preprofessional Seminar in Speech Pathology and Audiology 0 or 1 h.

Class meetings to introduce and expand field of speech pathology and audiology for students who anticipate majoring in this area.

3:10 Introduction to the Speech and Hearing Clinic no cr. Open to 4th-year student in need of Speech and Hearing Clinic services, registration by clinical staff.

8:58 Introduction to Speech and Hearing Processes and Disorders 3 h.

Speech, language, and auditory behavior as field of scientific study, consideration of specific types of speech, hearing and language disorders, normal speech and two laboratory-discussion periods per week, taken in Psychology 2:147.

3:20 Phonetics of Modern American English 3 h.

General principles and techniques of speech, hearing and auditory disorders as field of scientific study, consideration of specific types of speech, hearing and language disorders, normal speech and two laboratory-discussion periods per week, taken in Psychology 2:147.

3:25 Phonetics of Modern American English 3 h.

General principles and techniques of speech, hearing and auditory disorders as field of scientific study, consideration of specific types of speech, hearing and language disorders, normal speech and two laboratory-discussion periods per week, taken in Psychology 2:147.

3:30 Introduction to Speech and Hearing Processes and Disorders 3 h.

Speech, language, and auditory behavior as field of scientific study, consideration of specific types of speech, hearing and language disorders, normal speech and two laboratory-discussion periods per week, taken in Psychology 2:147.

3:35 Audiology Seminar 3 h.

Teaching, research, preparation of papers and discussion of research problems in audiology.

3:40 Honors Thesis 3 h.

 Preparation of major paper focusing upon research problem in speech pathology and audiology. Open to Honors students only.

5:10 Honor Thesis 3 h.

Preparation of major paper focusing upon research problem in speech pathology and audiology. Open to Honors students only.

5:15 Introduction to Speech and Hearing Processes and Disorders 3 h.

Speech, language, and auditory behavior as field of scientific study, consideration of specific types of speech, hearing and language disorders, normal speech and two laboratory-discussion periods per week, taken in Psychology 2:147.

5:20 Introduction to Hearing Science 3 h.

Normative auditory processes: hearing, balance, physiology of the auditory system, subjective and objective auditory testing. Two lectures and two laboratory-discussion periods per week, taken in Psychology 2:147.

5:25 Introduction to Hearing Science 3 h.

Normative auditory processes: hearing, balance, physiology of the auditory system, subjective and objective auditory testing. Two lectures and two laboratory-discussion periods per week, taken in Psychology 2:147.

5:30 Introduction to Language Development 5 h.

Survey of contemporary theoretical research dealing with acquisition of language in children, preschool children 3:117 or 5:103, 100.

5:35 Introduction to Language Development 5 h.

Survey of contemporary theoretical research dealing with acquisition of language in children, preschool children 3:117 or 5:103, 100.

5:40 Introduction to Language Development 5 h.

Survey of contemporary theoretical research dealing with acquisition of language in children, preschool children 3:117 or 5:103, 100.

5:45 Introduction to Language Development 5 h.

Survey of contemporary theoretical research dealing with acquisition of language in children, preschool children 3:117 or 5:103, 100.

5:50 Introduction to Language Development 5 h.

Survey of contemporary theoretical research dealing with acquisition of language in children, preschool children 3:117 or 5:103, 100.

6:00 Introduction to Language Development 5 h.

Survey of contemporary theoretical research dealing with acquisition of language in children, preschool children 3:117 or 5:103, 100.
of the human environment with particular reference to the urbanized area. Preparation for work in this profession involves training in observing, analyzing and interpreting the social, economic, political and technological forces which affect environment. The Department is recognized by the American Institute of Planners as meeting its standards for professional education.

Both the M.A. and the M.S. degree programs are professional programs which prepare and qualify students to enter the planning profession. The curriculum is planned for a two-year, four-semester sequence. The total requirement is 48 semester hours.

There is today a strong demand for the services of persons with graduate degrees in planning. The profession is unusually rewarding in its opportunities for collaborative participation with professionals in related fields contributing to planning.

Admission Requirements
Candidates for admission are required to have a bachelor’s degree from an accredited college. Applicants from a wide variety of fields of undergraduate concentration are eligible for admission. Those fields considered most relevant are sociology, economics, political science, geography, civil engineering and architecture. Each student is expected to have a basic knowledge of economics, American government and statistics. Engineering students will be given exams in these areas, and extra individual work may be required to reach a minimal competence.

Study Direction
A program of study is prepared for each student on an individual basis, related to previous education and experience. In the second of the two years, students choose one of three directions in their planning education:

- Generalist, in which students pursue the broadest knowledge of the field of urban and regional planning with specific specialization.
- Concentrated Generalist, in which students focus on a particular subarea of planning such as housing, health, design, transportation, education or land use.
- Specialist, in which students choose intensive study of a particular subarea at the expense of a more general approach and depend heavily on courses outside the Department.

Curriculum, Options and Requirements
The curriculum in planning is designed to differentiate between urban and regional focus, to allow for concentrations in various methodological disciplines, such as analytical techniques, policy formulation, implementation and evaluation or design, and concentrations in functional sectors of planning, such as land use, transportation, economic development, open space/recreation, social policy planning, health and environmental quality.

The required professional planning courses constitute approximately one-half of the semester hours necessary for the degree. The remaining hours are chosen to develop the special interests of the student through course offerings in other departments, specialized courses by the planning faculty and individual study programs.

Joint Programs
A joint program with the College of Law is offered, leading to the degree, Juris Doctor and Master of Arts in Urban and Regional Planning, after approximately four years of study. This represents an overlap of credits sufficient to reduce the time required from five to four years. A joint degree program is also offered in urban transportation. The Center for Urban Transportation Studies is located in the Institute of Urban and Regional Research and offers a multidisciplinary evening and research program. Other joint-degree programs are also possible; inquiries regarding such are advised well in advance of the start of the academic year.

Thesis Requirement
A thesis for six semester hours credit is included; this may be expanded to warrant additional credit. Variety is encouraged in the form of the thesis, to include design/physical planning projects, multimedia presentations and other approaches. An alternative to the thesis is offered: a shorter paper or project for three or more credit hours plus a comprehensive exam.

Internship Employment
For the summer between the two academic years, each student is advised to secure employment in an operating planning agency, community organization or private firm selected through counseling with the faculty. Emphasis is made upon finding opportunities in large metropolitan areas or in agencies undertaking experimental programs. If meaningful internship work is unavailable, there are options such as a systematic program of volunteer work or agency observations throughout the second year. A brief paper concerning the nature of internship or optional work is also required.

Options
Within the two-year sequence options have been designed to provide choices as to general direction as described above. During the year 1971–1972, the Department introduced four of these options through a major revision of curriculum on an experimental basis. The new program continues for 1972–1973. Should there be any major changes, applicants will be informed. The two-year sequence is as follows:

First Semester
A 13-credit “omnibus” course is required of all students. It is taught by three faculty members and three teaching assistants. Its purpose is to demonstrate the generalist approach and teach some fundamentals of planning.

Second Semester
Each student will take a four-credit course which combines the materials 102-206 Planning Analysis and Techniques and 102- 210 Quantitative Methods in Planning which were not covered first semester. Secondly, all students will take four credits in a series of core modules. In this content four short courses of three to five weeks’ duration can be selected among approximately 10 offerings. The modules will cover subareas of planning such as housing, land-use controls, transportation, regional de-
Field Studies Program

From time to time there are opportunities for second-year students to get academic credit for field work in the planning area. In the past students have worked with low-income residents of Des Moines and Waterloo. If extensive, such work can be carried out in residence. Projects are chosen so as to provide a regular field studies option in Chicago. If this is successful, field work opportunities will become a regular option in the curriculum.

Joint Program in Urban Planning and Law

The Joint Program in Urban and Regional Planning and Law is offered to educate individuals for active involvement in the resolution of major social, economic and political problems. The Program is composed of required work in law and planning, and electives which permit some flexibility of purpose and design.

The Program is best suited to persons with broad interests and experience, capable of interdisciplinary study and seeking to prepare themselves for various investigative and advocacy for neglected groups and interests of society.

The College of Law requirement for the degree Juris Doctor in 90 semester hours. In the joint program, 12 semester hours of work in planning are accepted for credit toward the law degree. The requirement for an M.A. in Urban and Regional Planning is a minimum of 48 semester hours. Two courses (six to seven semester hours) in law may be credited toward the planning degree.

Joint Program in Urban Transportation

The graduate program in urban transportation consists of a multidisciplinary approach to research and training in urban transportation. The training and research program is conducted in a broad urban context with emphasis on the interaction of several academic disciplines to adequately define the scope of urban transportation problems as they relate to social, economic, political and physical elements of the urban environment.

This broad, multidisciplinary approach is fostered by the Urban Transportation program in The University of Iowa through the Institute of Urban and Regional Research, which is the principal organization for the graduate program in urban transportation. The urban transportation program can be part of a Departmental master's or doctoral program. The graduate program in urban transportation does not grant degree; degrees are granted by participating departments and programs, such as civil engineering, economics, geography, industrial management engineering, political science, sociology and urban and regional planning.

In essence the training program will consist of a set of core courses which will be required of all students in the urban transportation program. Students will also have to meet degree requirements within their respective departments. The research program to be pursued in this program covers a broad scope of activities. Specific research efforts to be conducted are: transit planning is small metropolitan areas; trip generation and travel behavior in metropolitan areas; urban change detection and the continuing plans of urban transportation planning, network analysis, and corridor analysis design team.

Students should submit duplicate copies of application and letters of recommendation, along with a statement indicating...
urban context, with an emphasis on the interaction of several academic disciplines to define adequately the scope of urban transportation problems as they relate to social, economic, political, and physical elements of the urban environment. This broader framework exists at The University of Illinois through the Institute of Urban and Regional Research which is the parent organization for the Graduate Program in Urban Transportation.

The urban transportation program is taken in conjunction with a Departmental master’s or doctoral program. The Graduate Program in Urban Transportation, which is housed in the Institute of Urban and Regional Research, does not grant degrees nor are the degrees in urban transportation per se; neither degrees are granted by participating departments and programs, such as Civil Engineering, Economics, Geography, Industrial and Management Engineering, Law, Political Science, Sociology, and Urban and Regional Planning. An appropriate notation will be made on a student’s transcript when completing the urban transportation requirements.

The training program consists of a set of core courses which are required of all students in the Urban Transportation Program. Students also have to meet degree requirements within their respective departments. The research to be pursued in this program covers a broad scope of activities. All supported students are expected to participate in research projects. The emphasis is on policy related research projects. Presently, research is being conducted in transit analysis and planning, trip generation and travel behavior, urban change detection in the continuing phase of urban transportation planning, network analysis, transportation corridor analysis, transportation safety research, and transit investment analysis.

Students should submit duplicate copies of application and letters of recommendation, along with a statement indicating their interest in urban transportation and how it relates to their main field.

Curriculum

Students working toward a master’s degree or a Ph.D. in any one of the following departments may find the Urban Transportation Program attractive and related to his or her interests:

- Civil Engineering
- Economics
- Geography
- Industrial and Management Engineering
- Law
- Political Science
- Sociology
- Urban and Regional Planning

Students participating in the Graduate Program in Urban Transportation must satisfy the requirements of their departments as well as the core courses specified in the Urban Transportation Program. The core courses of the Urban Transportation Program are subdivided into two separate option sets. One option focuses on Transportation Policy Analysis and the other on Transportation Systems Analysis. Each option requires six core courses with two courses common to both options. In addition to the core requirement, students enrolled in the program may elect other courses.

Depending on the nature of the student’s department or program of origin a combined master’s program may be of one, two or three years duration. Generally speaking the Urban Transportation Program will add one or two semesters to a student’s program depending on the degree to which core courses apply to the main program.

Core Courses

The following courses are common to both the Transportation Systems Analysis option and the Transportation Policy Analysis option:

102:211 Social, Economic and Institutional Impacts of Urban Transportation
53:272 Urban Transportation Planning

The following are core courses for the Transportation Policy Analysis Option:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>6E:115</td>
<td>Introduction to Regional and Urban Economics</td>
</tr>
<tr>
<td>44:137</td>
<td>City Growth and Development</td>
</tr>
<tr>
<td>30:101</td>
<td>Municipal Government and Politics</td>
</tr>
<tr>
<td>30:353</td>
<td>Community Political Systems</td>
</tr>
<tr>
<td>34:150</td>
<td>Political Sociology</td>
</tr>
</tbody>
</table>

The following are core courses for the Transportation Systems Analysis option:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>53:11</td>
<td>Transportation Analysis</td>
</tr>
<tr>
<td>102:226</td>
<td>Seminar: Urban Transportation</td>
</tr>
<tr>
<td>44:236</td>
<td>Travel Behavior in Urban Areas</td>
</tr>
<tr>
<td>44:137</td>
<td>City Growth and Development</td>
</tr>
<tr>
<td>102:239</td>
<td>Transportation Planning and Systems Analysis</td>
</tr>
</tbody>
</table>

Student Support

Both fellowship support and research assistantships are available for qualified students in the Graduate Program in Urban Transportation. Generally, fellowships will be awarded to first-year students and research assistantships to second-year students.

Women’s Studies

Advisory Subcommittees Chair, Patricia Aida

In response to a conscious need of women to examine their social, psychological and political positions, the University has begun the development of a Women’s Studies Program. Several departments and programs now offer courses consid-
Zoology

Department Chairman Jerry J. Keltos
Degrees offered B.A., M.S., Ph.D.; also M.S. in biology jointly with Botany Department

Undergraduate Program

Majors are required to have a modest background in physics, mathematics and chemistry in order to prepare them for understanding biological phenomena at the various levels of organization, from the molecular, cellular and organismic through those of the population, species and ecosystem. Graduates of the Department meet the professional requirements in the health sciences, or they may continue into graduate programs leading to teaching (high school, community college, college and university), service and research in various professional areas (e.g., paramedical fields, parasitology, environmental sciences, etc.).

The basic courses offered in the Department serve both its own majors and those planning to enter medicine, dentistry or related professions. They also serve students in fields such as psychology, anthropology and sociology. The Department is developing additional courses for the nonmajor—that is, the major in the humanities, social sciences, business administration, etc.

The Departmental experience is based upon an introductory course which stresses principles. Each student is further required to take courses in genetics (which give emphasis to traditional basic approaches, and to current materials in molecular genetics, and some acquaintance with other genetic disciplines) and in cell physiology (the cell cycle, cell structure and function, energetics, intermediary metabolism, regulation, membrane phenomena and mechanisms of action of nerve and muscle). Beyond these, courses electives are given certain choices from a restricted block of courses: embryology, invertebrates, vertebrates, evolution, ecology (at least eight hours) and free choices from nearly all of the other undergraduate level courses (12 hours), or a total of 31 semester hours in zoology. To emphasize the concern of the Department with breadth of training, and desirability of background in related disciplines, students must substitute four hours of work in botany, microbiology, biochemistry or mathematics (calculus) for four hours of work in zoological courses.

Required courses for the B.A. degree are:

- 37.1 Principles of Animal Biology 5 s.h.
- 37.110 Fundamental Genetics 4 s.h.
- 37.105 Cell Physiology 4 s.h.

Eight hours are to be selected from the following list:

- 37.102 Principles of Modern Embryology 4 s.h.
- 37.107 Animal Kingdom I (Invertebrates) 4 s.h.
- 37.108 Animal Kingdom II (Vertebrates) 4 s.h.
- 37.131 Evolution 4 s.h.
- 37.132 Ecology 4 s.h.

Twelve hours are to be selected from any other undergraduate courses in zoology numbered 102–199, except that no more than two semester hours may be accumulated from courses 37.172, 185, 182, 196, 198, 199. One may not elect 37.103 if 37.108 has been taken. Four of these 12 hours may be earned in botany (any course), calculus, general biochemistry (95.165) or microbiology (61.157).

Requirements for the B.A. degree are under review and may be modified. Write the Department for current details.

Other courses in physical sciences and mathematics required of undergraduate majors are:

- 222M.20 Elementary Functions 3 s.h.
- 4.41 and 4.44 Principles of Chemistry I and II 6 or 7 s.h.
- 4.5 Principles of Chemistry 3 s.h.
- 4.6 Elementary Chemistry Laboratory 2 s.h.
- 4.121 Organic Chemistry I 3 s.h.
- 4.122 Organic Chemistry II or Biochemistry 95.120 3 s.h.
- 4.141 Intermediate Chemistry Laboratory 2 s.h.
- 29.1 and 2 College Physics 8 s.h.

For general degree requirements see "College of Liberal Arts." Supplementary courses in botany, chemistry, geology, microbiology, mathematics and physics are recommended.

Honors

Honors candidates in zoology fulfill the College-wide requirements by completing at least six semester hours of work in zoology, 37.102, 197, and 198, followed by a comprehensive examination. The Departmental program offers membership in a small, active group of undergraduate students with common interests, and association with one of the Department’s research groups. Experiments, running discussions of current research, the study of specialized topics and attendance at research lectures are pursuits of practicing scientists to which the students are introduced. An introduction to research activities can be obtained either in or outside the scope of the honors program and may be pursued in summer as well as during the academic year.

Graduate Programs

The various graduate programs of the Department, leading to M.S. or Ph.D. degrees, are designed to prepare students for...
various kinds of professional activities, including teaching at various levels, participation in research in private, educational or government laboratories, or other kinds of professional service, frequently involving some planning or administrative func-
tions. Over 80 percent of the doctorates if the last two decades have, at one time or another, been engaged in college or univer-
sity teaching. A substantial number of students completing their training with an M.S. degree have obtaining technical or profes-
sional positions, some of which require assumption of independ-
ent responsibility in performance or planning.

Each of the members of the Department carries out research. Programs in cell biology, developmental biology, genetics, molecular biology, neurobiology in its various aspects, ecology, behavior, physiology and parasitology are included in the De-
partment, and most of these have auxiliary aspects which are served through work in other departments. Sometimes with joint sponsorship of faculty in the other departments. For purposes of student advising, these programs have been consolidated into four general areas: developmental biology, ecology and behavior, genetics, and physiology. Each major selects one of these areas as a specialty, and is thereafter advised by the faculty of that area; his or her progress toward meeting the requirements of the ad-
vanced degree program are monitored by the faculty of that Departmental area.

The faculty area committee can specify courses which must be taken or audited. It can recommend that particular teaching or research experiences be sought. It has the obligation of offering advice and counsel. It is responsible for producing the M.S. examination, administering it and providing faculty members for the formal committees which oversee M.S. theses and evaluate the examinations. Once a student has been approved for con-
tinuation toward a Ph.D. degree, he or she selects an advisory committee of five (one from outside the Department), and that committee is thereafter responsible for advising and monitoring the student's progress.

Admission

Applicants for admission to the graduate programs should have a cumulative undergraduate grade point average of 2.8 or better. Graduate Record Examination scores (verbal and quantitative) ought to be above 500 (1000 level if the two scores summed). Under special circumstances students with a grade-
point average below 2.8 may be considered for conditional ad-
mission.

Although the Department prefers applicants with an under-
graduate program much like its own, it is prepared to admit students with other backgrounds, such as biology, bio-
chemistry, chemical science, etc. All new students prior to registration in August, submit themselves to a diagnostic exami-
nation covering topics in developmental biology, genetics, physi-
ology with an emphasis on cell physiology, evolution and ecology. On the basis of examination results students are excused from further work in one or all of these fields, or are required to take specific courses to enhance their background in the area. These requirements are made in order to ensure breadth of back-
ground prior to engaging upon more specialized graduate work. Any deficiencies in mathematics, chemistry or physics are to be made up during the first year. Applicants with a degree other than biology or zoology may request modification of certain of the area requirements; this matter is the province of the student's degree committee.

The M.S. Degree in Zoology

The M.S. degree with thesis requires 30 semester hours of gradu-
ate credit and a thesis based on original research. Ordinarily six to eight semester hours are assigned to thesis research and writ-
ing. The remaining hours are to be selected in consultation with the student's advisory committee, and the choice of courses will be tailored to the student's background and career goals. Credit received in courses at the 100-level or above, with the exception of 37:101 and of courses in zoology required to make up deficiencies revealed by the diagnostic examinations (see above), may be included in the 30-hour minimum if approved by the advisory committee. Other than the thesis is accepted, the candidate must pass a written examination covering his or her graduate program in zoology, with emphasis on the area related to the student's re-
search. This is followed by oral examination concerned mainly with the work reported in the thesis.

The M.S. degree without thesis requires 34 semester hours of graduate credit and a library research report. No more than four semester hours of credit may be granted for the report research. Credit may be taken in graduate courses in zoology or cognate sciences, those courses to be determined in consultation with the student's thesis committee and tailored to fit the student's back-
ground and career goals. Credit received in courses at the 100-
level or above, with the exception of 37:101 and courses in zoology required to make up deficiencies revealed by the diag-
nostic 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 thesis. Ordinarily six to eight semester hours are assigned to research, and writing, eight to twelve semester hours to graduate courses in zoology, eight semester hours to graduate courses in botany, and the remaining semester hours to free electives. Following acceptance of the thesis, the candidate must pass a written examination covering graduate programs in botany and zoology. This is followed by an oral examination based mainly on the work reported in the thesis. The Botany and Zoology departments are now considering the offering of a 34-semester hour program leading to the M.S. in biology, without thesis.

The Ph.D. Degree in Zoology

For each Ph.D. degree candidate a Departmental committee is formed, of which the candidate's faculty sponsor is chairman. The committee is charged with establishing those formal course or proficiency requirements which the candidate must meet. The background of the candidate, and his or her current and prospective research interests, are taken into consideration. The commit-
tee 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 his B.S. thesis, or through equivalent research work. In his or her research, which culminates in the doctoral dissertation, all of the requirements for a scholarly piece of work will be demanded. The acceptance of the thesis by the Department will be followed by the final oral examination over the thesis itself and the specialized field which it represents.

Special Facilities
The Zoology Department is housed in five buildings, in a cluster, the two newest being wings of the original unit. One of these, which doubled available research space, was occupied in 1965, the most recent, which is somewhat larger, was occupied in 1971. The buildings house the Department fully, so far as teaching, office and research facilities are concerned. The buildings also house a Departmental library which provides adequate study space as well as the books and journals for nearly all of the teaching and research needs of the Department.

Many of the laboratory courses in the Department use living animals heavily, and the Department is provided with animal care facilities for mammals, birds, reptiles, amphibians, fish, insects and invertebrates of various sorts, including protozoa. Special facilities exist for research with viruses, fruit flies and marine organisms. At least 12 walk-in and reach-in environmental chambers are provided for special culture or animal care needs.

There are four transmission electron microscopes, including one for teaching and student research purposes, and one with high resolution capabilities. The Department also houses the scanning electron microscope facility of the University.

The Department is equipped to carry out research in all areas in which graduate teaching is conducted. Light microscopes of a variety of types are available, including those with phase contrast, Nomarski and Nomarski differential interference contrast. Microscopes of various sorts, including refrigerated, high speed and ultra high speed, are available.

Other special equipment includes stereophotographs and chromatography apparatus; electron scanning and recording equipment; a PDP-12 computer; a Wang calculator; and other desk top computers; gas flow and liquid chromatographic columns for radioisotope detection and analysis; a gas chromatographic scanner and a gas-flow counter; constant temperature bath units of various temperatures for seawater and general laboratory use; incubators; recording UV and visible spectrophotometers; densitometers; Coulter counters; instruments and a field vehicle for field work in physical oceanology; water tables, seapods and "instant ocean"; microinjection pumps; tissue culture room and hoods, and cold rooms. Laboratories are otherwise equipped for advanced work which calls for specialized biochemical, biophysical, cytological or serological techniques.

Special Faculty Strengths

Graduate students are invited to apply for awards and aids. At present some support is obtained by at least 80 percent of the graduate students in the Department. The largest support is provided by teaching assistantships (all Ph.D. candidates are required to assist in several courses), by partial tuition scholarships in the academic year and full tuition scholarships in the summer session, and by research assistantships, provided either through Graduate College support or from individual research grants administered by faculty members. The Department has several NSF trainers, some NSF predoctoral fellows, several NIH trainers in developmental biology (in the Departmental training program), several NIH trainees in neurobiology (in an interdepartmental program), some NDEA predoctoral trainees, and several postdoctoral fellows or trainees supported by funds from the NSF and the NIH. One NIMH predoctoral fellow is in residence.

The Department also participates in the university-sponsored program of teaching/research fellowships. Students who apply for any Departmental award may be considered for others, if the reviewing committee considers them eligible. The Department provides some support each summer for students who arrange for training at marine laboratories on the coast, or at other appropriate summer stations. Most assistantship and other 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 appointments should include clear statements of reasons of interest, if the interest has been defined at the time of application.

Iowa Lakeside Laboratory

Courses in field biology and aquatic biology extend the on-campus work in zoology. See "Division of Extension and University Services."
Instruction in business administration and economics began at The University of Iowa before 1900. A School of Commerce was organized in 1914, and was granted college status in 1921. In 1939 its name was changed to College of Business Administration.

The College offers the degrees Bachelor of Business Administration; Master of Business Administration; Master of Arts in Accounting, Business Administration and Economics; and Doctor of Philosophy in Business Administration and Economics. These undergraduate and graduate programs are fully accredited by the American Association of Collegiate Schools of Business. Each program is administered by an academic program committee with local faculty and student membership. The College comprises four departments—Accounting, Business Administration, Business Education, Economics—and a Center for Labor and Management.

Facilities

The College is located in Phillips Hall, an air-conditioned, high-rise building designed especially for the programs of the College. Completed in 1953, the building contains several seminar and conference rooms, an auditorium, a student lounge, and the business and economics library, in addition to a wide range of classroom facilities. Extensive research materials for business and economics are maintained in the Main Library, and the facility of the University Computer Center are available to all students.

Center for Labor and Management

As a major continuing education arm of the College, the Center for Labor and Management provides relevant information to management, labor, and government representatives in Iowa and the Midwest region. Current administrative and industrial relations knowledge is disseminated through on- and off-campus conferences and through a research-oriented publication series. Organizational research and development projects give students experience in research and teaching as well as the opportunity to discuss current societal problems with private and public-sector labor and management officials.

General Information: Undergraduate Study

The College offers the Bachelor of Business Administration degree in all four of its departments.

The B.B.A. student completes background studies either in the College of Liberal Arts at Iowa or in another institution and usually enters the College of Business Administration as a junior.

Admission requires at least sophomore standing. Unconditional admission requires at least a 2.25 grade-point average (A = 4) in all college-level courses undertaken, all courses undertaken at Iowa, all business and economics courses, and all business and economics courses undertaken at Iowa.

The applicant must also have satisfied the U of I College of Liberal Arts' rhetoric skills requirement and either its historical, cultural, literature, social science or natural science core requirement.

No more than 60 semester hours, or equivalents, of transfer credit will be accepted for a student transferring from a two-year institution. Transfer credit for business and economics courses taken during the freshman and sophomore years are counted toward the B.B.A. degree only if such courses are normally offered at lower division courses at Iowa.

Fulfillment of the minimum requirements does not assure admission. The College's admission committee reviews all applications and selects the applicants who appear best qualified. Students who have minor deficiencies in meeting grade-point requirements may be granted conditional or probationary admission.

Pass/Fail Grading

Of the total semester hours required for a B.B.A. degree, up to 33 may be taken on a pass/fail basis with the consent of the advisor and instructor. However, a student may not count more than 16 semester hours of pass/fail credit in his or her last 60 semester hours of coursework. Courses used to satisfy the common business requirements which carry a D+, D, D- or F prefix may not be taken pass/fail nor may courses in the student's major area or areas of concentration. Registration on a pass/fail basis must be completed during the first three weeks of a semester or the first two weeks of a summer session.

Maximum Schedule

Course schedules of more than 18 semester hours for a semester or nine for a summer session require the assistant dean's approval.

Graduation Requirements

Iowa's new B.B.A. curriculum reduces from 126 to 120 the number of semester hours required for graduation; and, while requiring at least 48 hours in business courses, it also requires at least 48 hours in nonbusiness courses. Thus the student must develop more breadth in his or her program than he or she would acquire in a traditional business program, and is encouraged to
develop a great deal of breadth. Yet if the student chooses he or she may develop some measure of specialization. Also, in most instances the student will be able to complete the new program a semester or summer session sooner than the old.

At least 24 semester hours of credit in courses offered by the College of Business Administration, and at least eight semester hours of credit in the student's major or area of concentration must be earned at Iowa.

To graduate, the B.B.A. candidate must have at least a 2.0 grade-point average on all coursework attempted, all coursework attempted at Iowa, all business and economics coursework attempted, all business and economics coursework attempted at Iowa, all coursework attempted in the major or area of concentration and all coursework attempted at Iowa in the major or area of concentration.

The last 30, or 45 of the last 60, semester hours of credit must be earned in residence at Iowa following admission to the College of Business Administration.

If the quantitative methods, accounting and economics requirements are not satisfied when the student is admitted to the College, they must be undertaken in his or her first enrollment and completed with successful completion. In general, all common requirements should be completed by the end of the student's junior year.

**Required Courses**

Each candidate for the B.B.A. degree must satisfy the following minimum common requirements:

- Rhetoric-Communications: 6 s.h.
- Historical-Cultural: 6 s.h.
- Literature: 6 s.h.
- Natural Sciences: 6 s.h.
- Sociology or Psychology (two courses in either area): 6 s.h.
- Quantitative Methods: 8 s.h.
- Accounting: 6 s.h.
- Economics: 6 s.h.
- Finance: 3 s.h.
- Legal Environment: 3 s.h.
- Management: 3 s.h.
- Marketing: 3 s.h.

In addition to the common requirements listed above, a student must complete a major area of study or two areas of concentration. The requirements for a specific major are established by the departments of the College. The two areas of concentration are selected by the student and must be approved by the academic advisor. Each area must consist of three courses (nine semester hours), and two courses in each area must be offered by the College of Business Administration.

**General Information: Graduate Study**

**Admission**

An applicant to any advanced degree program must be admitted to the Graduate College (see "Graduate College").

In addition to a baccalaureate degree from an accredited college or university, a satisfactory grade-point average and three letters of recommendation, an applicant to the advanced degree programs in business administration, excepting economics, must achieve satisfactory scores on the Admission Test for Graduate Study in Business (ATGSB). No admission decisions will be made until the ATGSB score is on file with the Director of Graduate Studies in Business. An applicant to the economics programs must attain a satisfactory score on the Graduate Record Examination (GRE).

Details concerning the examinations may be obtained directly from Educational Testing Service, Box 966, Princeton, New Jersey 08540, or from University Evaluation and Examination Services, 330 Jefferson Building, Iowa City, Iowa, 52240.

**Interdepartmental Programs**

**Master of Business Administration**

The Master of Business Administration (M.B.A.) program is designed for individuals preparing for professional administrative careers primarily in business. The program gives the individual a means of enhancing career opportunities and at the same time provides industry and government with the professional personnel required in a dynamic economy.

The curriculum is designed for candidates whose undergraduate majors were in liberal arts, sciences, engineering and other nonbusiness areas, as well as for graduates of schools or colleges of business administration. For the student who has taken no undergraduate business administration courses, 54 semester hours of coursework are required. For the student holding an undergraduate degree in business administration, certain of the requirements will normally be waived. However, in all cases, a minimum of 30 semester hours of graduate work is required.

**Curriculum**—The following courses, totaling 24 semester hours, are normally required of the nonbusiness undergraduate major:

Some of these courses are also required of the student who has majored in business but who was not exposed to one or more of these courses. This work is normally taken in the first year.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>6A:114</td>
<td>Financial Accounting</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>6D:154</td>
<td>Human Resources Management</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>6D:181</td>
<td>Quantitative Methods in Economics and Business</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>6D:182</td>
<td>Statistics for Business Decisions</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>6D:205</td>
<td>Financial Management</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>6D:211</td>
<td>Marketing Management</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>6D:335</td>
<td>Organization and Management Theory</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>6E:106</td>
<td>Price and Employment Theory</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

Since the M.B.A. student uses the computer, any student not having computer programming capabilities is expected to enroll in a credit or noncredit programming course at The University of Iowa.

**The M.B.A. Core**—The student who has previously met the requirements of the courses listed above will enter directly into the M.B.A. core. In the M.B.A. core the student has the opportunity to continue the broad study begun in the sequences of courses listed above and pursue in greater depth the special interests associated with his or her own career objectives.

In addition to courses required of all students, each individual decides upon an area of concentration and, with the assistance...
of the faculty, selects six hours of work. Examples of areas of concentration which might be taken are:

**Accounting** Operations Research
Finance Organizational Theory
Industrial Relations Quantitative Methods
International Business Risk Management and Insurance
Marketing Systems Management

Following are the core-course requirements totaling 30 semester hours:

**6A:214 Managerial Accounting** 3 s.h.
**6B:203 Managerial Economics** 3 s.h.
**6B:207 Business and Society** 3 s.h.
**6B:242 Operations Research in Business** 3 s.h.
**6B:261 Organizational and Individual Behavior** 3 s.h.
**6B:278 Simulation Exercise** 1 s.h.
**6B:279 Administrative Policy** 2 s.h.

As an alternative to 6B:279, the student may take 6B:291.

**6B:291 M.B.A. Seminar** 2 s.h.
**6E:202 National Income Analysis** 3 s.h.
**Area of Concentration** 6 s.h.
**Elective** 3 s.h.

**Doctor of Philosophy in Business Administration**

The doctoral program is intended for individuals preparing for faculty positions in university or collegiate schools of business administration and for business or government careers as research directors, staff specialists and consultants.

The Ph.D. program includes requirements which are considered essential preparation for all students, yet is sufficiently flexible to accommodate specialization according to the student's interests, background and objectives. In all phases of the program, doctoral students can demonstrate proficiency through qualifying area exam exemptions and are encouraged to do so.

**Basic Areas**—The purpose of the basic areas is to develop competency in research methods and to provide knowledge needed for study in all or any later specialization of more specialized courses. Ideally, the student should complete all requirements in the basic areas before proceeding to the elected and specialized areas.

The requirements in the basic areas may be satisfied by passing a qualifying examination or by successfully completing each course.

The basic areas and required courses are:

**Economic Theory** 6B:214 Income and Employment Theory 3 s.h.
**6E:214 Income and Employment Theory** 3 s.h.
**Statistics and Quantitative Analysis** 6B:243 Statistics for Decision Making I 3 s.h.
**6B:243 Statistics for Decision Making I** 3 s.h.
**6B:244 Statistics for Decision Making II** 6 s.h.

**Behavioral Sciences** 6B:263 Behavioral Science and Business Organization I 6 s.h.
**6B:264 Behavioral Science and Business Organization II** 6 s.h.

**Social Environment** 6B:259 Social Environment of Industry 3 s.h.

**Elective Areas**—Each student elects two areas for intensive study. With the approval of the adviser and the director of graduate studies in business administration, the student chooses two "200-level" graduate courses in each of two areas.

The elected area requirements may be satisfied by comprehensive examination, but this is unusual. Any student, in any elective, does not attain a scholastic level of achievement deemed essential for a Ph.D. student, may be required to take a comprehensive examination, in addition to successfully completing the course.

One of the elected areas must be, and both may be, in business administration. The business administration elected areas may be such areas as accounting, finance, information theory, organizational behavior, marketing, industrial relations and insurance. However, no attempt is made to restrict the elected areas to traditional classifications. The elected areas may be in the behavioral sciences, social environment or an area which combines economic theory, statistics and quantitative analysis.

The requirements of one of the elected areas may be satisfied outside of the College of Business Administration by successful completion of two graduate-level courses. For example, two psychology courses would be acceptable, provided the student's adviser and the director of graduate studies in business determine that the courses are relevant to the student's total academic program.

**Specialized Areas**—As a preparation for dissertation research, the student selects two areas for specialization and takes two graduate-level courses in each. One or both specialized areas may be a continuation of the coursework taken in the elected areas. They also may be from three of the student's four basic areas: economics (i.e., economic theory, manpower economics, etc.) or statistics and operations research or the behavioral sciences.

Assuming good scholastic attainment, it is possible for a student to move through the basic and elected areas without taking a comprehensive examination, but all students must pass written comprehensive examinations in both of their specialized areas. In neither specialized area is the examination limited to the two courses in that area, but the examination assumes that the student has completed the requirements which give him or her a mastery over the field which is being examined.

Following completion of all areas, and after passing written comprehensive examinations over the specialized areas, the student must sit for an oral comprehensive examination. The successful completion of these requirements permits the student to work full time on the dissertation.

**Dissertation Research**—The doctoral dissertation is intended to provide written evidence of the candidate's ability to conduct scholarly research in his or her chosen specialized areas. Normally the original investigation, plus the writing and defense of the dissertation, will require full-time effort for at least one year.

Upon submission of the completed dissertation, the candidate is required to take an oral dissertation defense examination. This dissertation defense is held before dissertation committee members and any faculty members of The University of Iowa who may wish to attend. Success in the examination completes the final requirement for the degree of Doctor of Philosophy in Business Administration.
Accounting

Department Chairperson: Louis F. Blugis
Degrees offered: B.B.A., M.A.

Accounting is the systematized recording, classifying and interpretation of the economic facts of a business or other organization, to permit effective management and to provide information for investors, creditors and the general public. Many educators consider training in accounting an ideal preparation for a business career because it offers a view of all aspects and phases of business organization. A bachelor's degree in accounting offers entry into a specialized field at the professional level.

The demand for industrial accountants has increased greatly; accounting graduates in industry may advance to executive positions. Many state and federal governmental agencies employ accountants. The demand for certified public accountants is increasing. A CPA may work for one of many regional, national, or international firms, or he or she may establish an independent practice. Approximately 30 percent of all accounting graduates take the CPA examination.

B.B.A. Requirements

All students in the undergraduate program in accounting must complete a basic core of accounting courses—Income Tax Accounting, Accounting for Management Analysis and Control, Financial Accounting (Assets and Equities), Financial Accounting (special topics), and Auditing Concepts and Procedures—and must elect other core analysis and budgeting, advanced tax accounting, or advanced and contemporary accounting.

A special program of financial aids provides annual awards to students in accounting through contributions from several major industrial firms and from public accounting firms.

In addition to courses required of all candidates for the degree, Bachelor of Business Administration, the undergraduate major in accounting requires a basic core of accounting courses totaling 18 semester hours as follows:

6A:113 Income Tax Accounting
6A:130 Accounting for Managerial Analysis and Control
6A:131 Financial Accounting: Assets and Equities
6A:144 Auditing Concepts and Procedures
6A:145 Senior Seminar in Accounting

In addition, the student may elect one or more of these courses:

6A:141 Advanced Tax Accounting
6A:148 Professional Accounting Problems
6A:170 Special Topics in Accounting

A maximum of 27 semester hours of credit in accounting courses may be counted toward the B.B.A.

M.A. Requirements

The Master of Arts degree is awarded upon successful completion of a minimum of 30 semester hours of graduate study. A minimum of 15 semester hours must be earned in 200-level courses. A total of 12 semester hours must be earned in these accounting courses:

6A:220 Accounting Literature and Research I
6A:221 Accounting Literature and Research II
6A:222 Contemporary Accounting Issues
6A:223 Contemporary Accounting Issues II

The remaining study will be in courses tailored to the student's background, interests and career objectives. The candidate has the option of writing a thesis for which three semester hours credit may be received, or a non-thesis option may be elected. In either case the candidate will be examined orally in the fields included in the program of study. This examination will be arranged by the adviser near the end of the student's program.

Staff: Professor Barnes; Professor emeritus Burney, Maynard; associate professors Blugis, Klinefelter, Smith; assistant professors Bailey, Kennedy, King, Linn, Lombeck

Courses Primarily for Undergraduates

6A:101 Introduction to Accounting 3 h.
Survey and analysis of contemporary accounting information systems emphasizing external reporting by firms to investors, creditors, publishers, and their relation to investor decisions; preresidential admission of University Junior re- quired.
6A:121 Introduction to Accounting II 3 h.
Survey and analysis of contemporary accounting information systems, emphasis on preparation of information for decision-making in organizations; internal re- ports and their relation to decision models employed by firms; preresidential 6A:101

Courses for Undergraduates and Graduates

6A:116 Income Tax Accounting 3 h.
Survey of current practices and thought relating to external reporting by firms to its investors, creditors and relations of current external reporting methods and their alternatives; primarily for B.B.A. students; for undergraduates approved, not open to undergraduates business majors; preresidential 6A:116 or equivalent.
6A:125 Managerial Accounting: Assets and Equities 3 h.
Concepts and methods used in internal financial information systems, qualitative and behavioral dimensions of organizational and accounting systems and their implications for accounting information; core analysis of managerial problems; preresidential 6A:125 or equivalent.
Concepts and analysis in corporate external reporting such as budgetary procedures, total financial statements and accounting reports; naive suggested alternative methods proposed and analyzed; preresidential 6A:129.
6A:141 Advanced Tax Accounting 3 h.
Partnerships, corporations, gifts, trusts and tax problems; tax planning and research; preresidential 6A:116.
6A:144 Auditing 3 h.
Review of internal controls in accounting systems and consideration of audit objectives, standards and procedures necessary to test integrity of accounting systems, internal and financial reports; preresidential 6A:116 or equivalent.
6A:145 Senior Seminar in Accounting 3 h.
Advanced topics in accounting; topics toward the degree require oral discussion, budgeting and system design, financial reporting for special entities, such as consolidated and non-profit organizations, and approaches to tax decisions though planning and research; preresidential 6A:115, 6A:130, 6A:132 and senior standing.
6A:148 Professional Accounting Problems 3 h.
Preparation for professional accounting practice through consideration of major
null
Courses for Undergraduates and Graduates

68:101 Directed Readings in Business Administration
or arr.

68:102 Management Economics
3 s.h.

68:103 Managerial Economics
3 s.h.

68:104 Economic Analysis Applied to Business Problems
3 s.h.

68:111 Investment Analysis
3 s.h.

68:112 Security Analysis
3 s.h.

68:113 Financial Statement Analysis
3 s.h.

68:114 Financial Management
3 s.h.

68:115 Financial Engineering
3 s.h.

68:116 Financial Markets
3 s.h.

68:117 Financial Institutions
3 s.h.

68:118 Financial Economics
3 s.h.

68:119 Financial Markets and Institutions
3 s.h.

68:120 Financial Markets and Institutions
3 s.h.

68:121 Financial Markets and Institutions
3 s.h.

68:122 Financial Markets and Institutions
3 s.h.

68:123 Financial Markets and Institutions
3 s.h.

68:124 Financial Markets and Institutions
3 s.h.

68:125 Financial Markets and Institutions
3 s.h.

68:126 Financial Markets and Institutions
3 s.h.

68:127 Financial Markets and Institutions
3 s.h.

68:128 Financial Markets and Institutions
3 s.h.

68:129 Financial Markets and Institutions
3 s.h.

68:130 Financial Markets and Institutions
3 s.h.

68:131 Financial Markets and Institutions
3 s.h.

68:132 Financial Markets and Institutions
3 s.h.

68:133 Financial Markets and Institutions
3 s.h.

68:134 Financial Markets and Institutions
3 s.h.

68:135 Financial Markets and Institutions
3 s.h.

68:136 Financial Markets and Institutions
3 s.h.

68:137 Financial Markets and Institutions
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68:138 Financial Markets and Institutions
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68:139 Financial Markets and Institutions
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68:140 Financial Markets and Institutions
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68:141 Financial Markets and Institutions
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68:142 Financial Markets and Institutions
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68:143 Financial Markets and Institutions
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68:145 Financial Markets and Institutions
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68:146 Financial Markets and Institutions
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68:147 Financial Markets and Institutions
3 s.h.

68:148 Financial Markets and Institutions
3 s.h.

68:149 Financial Markets and Institutions
3 s.h.

68:150 Financial Markets and Institutions
3 s.h.

68:151 Financial Markets and Institutions
3 s.h.

68:152 Financial Markets and Institutions
3 s.h.
teaching at the secondary, junior college or university levels, and provides a broad educational experience in the field of business administration.

**The Undergraduate Program**

The business education undergraduate program primarily for persons who want to become business teachers at the secondary level.

The program has three areas of concentration—secretarial education, office education and basic business education—from which the undergraduate student selects an area of emphasis.

Secretarial education prepares the student to teach typing, shorthand, accounting and other information-processing techniques. Office education gives the student the background necessary to teach typing, accounting and general business courses.

Basic business education prepares students to teach in a broader economic business, consumer economics, business law, economic geography and accounting.

Students majoring in business education must complete the general requirements for the Bachelor of Business Administration degree in addition to courses required for the Iowa Professional Teaching Certificate.

Business education majors receive a broad foundation in business administration courses, as well as specialized professional courses in business education to prepare them for their first teaching experience. Student teaching in an accredited high school in cooperation with an experienced business teacher is the capstone of the undergraduate program.

These courses are required of all business education teaching majors:

- **65.2** Business Typewriting
- **65.35** Office Calculating Machines
- **65.125** Administrative Communication
- **65.155** Business Data Processing
- **65.191** Principles of Business Education

* For teacher certification, students must take a terminal course at the University of Iowa

In addition, the student must choose from one of these three teaching options:

**Secretarial Education Option**

- **65.237** Transcription (required) 3 s.h.
- **65.36** Office Services (required) 3 s.h.
- plus six semester hours from:
  - **65.24** Executive Secretarial Procedures 3 s.h.
  - **65.126** Written Communication in Business 3 s.h.
  - **65.128** The Office Market 3 s.h.
  - **65.148** Practicum: Office Problems 3 s.h.
  - **65.156** Data Processing Systems 3 s.h.
  - or other electives as approved

* For teacher certification, students must take a terminal course at the University of Iowa

**Office Education (Nonsecretarial) Option**

- **65.36** Office Services (required) 3 s.h.
- plus nine semester hours from:
  - **65.126** Written Communication in Business 3 s.h.

**Basic Business Education Option**

- **65.145** Office Management (required) 3 s.h.
- plus nine semester hours beyond the required coursework in:
  - Accounting
  - Administrative Behavior
  - Economics
  - Finance and Insurance
  - Management
  - Marketing and Advertising

Two areas of concentration in business education consisting of a minimum of three courses (nine semester hours each) can be arranged for students pursuing a non-teaching degree in business administration.

**M.A. Program**

This nonthesis program in business education is designed for the graduate student who holds a teacher's certificate and has either a major or a minor teaching area in business education.

Sufficient flexibility is provided in the program to meet individual needs for upgrading professional competence in teaching the business subjects. In order to achieve this desired flexibility, coursework from three areas is included in the program, with an approved freedom of choice within each area:

- Business Administration: Content to provide improvement in specific content areas in business
- Professional Business Education: to emphasize the improvement of teaching and philosophy of business education; and
- Professional General Education: to emphasize general aspects of teaching.

A minimum of 32 semester hours must be included in the program, with an approximate distribution of hours among the three areas of study as follows:

- **Business Administration:** 12 to 15 semester hours of courses must be selected in business administration content, with the approval of the advisor; available areas: accounting, administrative management, advertising, economics, financial economics, financial management, industrial relations, insurance and marketing.
- **Business Education:** nine to 12 semester hours must be selected from professional business education courses with the approval of the advisor; and
- **Education:** six to nine semester hours must be selected from professional education courses with the approval of the advisor; available areas: adult education, educational administration, educational media, educational psychology, measurement and statistics; higher education; social foundations and comparative education; and special education.

Three two-hour examinations or two three-hour examinations are required in business administration, business education or secondary education. An area is defined as six semester hours or more in related courses.
M.A.T. Program
The M.A.T. program is a 38-semester-hour nonthesis course of study. It is designed for superior liberal arts graduates who have had few or no education courses. The program enables the student to enrich his or her background by completing graduate courses in a substantive area and graduate education courses which constitute professional preparation for secondary school teacher certification.

Individuals who have not obtained certification are eligible if they have completed accredited bachelor's degree programs with majors in academic areas commonly included in high school curricula and have attained a minimum grade-point average of 2.5 (A = 4). Most advisers require students to maintain a 3.0 in graduate work once they are accepted into the program. While students may be admitted before taking the Graduate Record Examination, this requirement should be met before the next registration date.

Two summers and an academic year of two semesters are usually necessary to complete the program. The certification sequence consists of 24-27 semester hours of graduate coursework as follows:

- One elective course in education:
  - Auditory-Verbal Teaching Methods
  - Social Development of the School-Age Child
  - Principles of Guidance
  - Construction and Use of Classroom Tests
  - Preprofessional Seminar
- Education Psychology 3
- Philosophy or History of Education 3
- Methods (credit arranged) 3-6
- Observation and Laboratory Practice 12

Candidates for the M.A.T. degree must pass comprehensive final examinations in business education and in education. These examinations are taken at the end of the session in which the candidate expects to receive the degree.

Ph.D. Program
Due to the flexible nature of this program, the candidate may place emphasis in both college (Business Administration and Education), although primary emphasis normally will be given to the various programs in business with particular attention to business education.

Admission Requirements
- Admission to The University of Iowa Graduate College
- Evidence of satisfactory performance on the Graduate Record Examination
- Evidence of good academic preparation to undertake doctoral work in business education

Degree Requirements
- Two tools to be chosen from: foreign language, applied statistics, two areas of advanced mathematics, computer programming, scientific method or other appropriate research tool to be approved by the adviser

- Areas of study:
  - A. Major area—business education
  - B. Related area in business
  - C. Minor or collateral area in education (such as adult education, educational administration, educational psychology, guidance and counseling, or higher education)
  - D. Completion of at least 90 semester hours beyond the bachelor's degree, including the dissertation

- Comprehensive examinations: three hours in each of the areas of study
- Dissertation proposal: to be submitted to doctoral committee
- Defense of the dissertation

The plan of study will be developed by the student and an advisor in accordance with individual needs. In each area of study there must be at least nine semester hours of doctoral-level coursework approved by the advisor.

Facilities
Modern office machines and equipment as well as secretarial listening laboratories are housed in the new air-conditioned College of Business Administration Building, Phillips Hall.

Faculty
All full-time faculty members of the Business Education Department have doctoral degrees, teaching experience at the high school level and extensive work experience in private industry. In addition, the entire faculty has an enviable record in publishing, from textbooks and monographs to articles written for leading publications in business education. The staff has engaged in both private and governmental research, as well as business and industrial counseling.

Staff: professors Gusta, Kallas, associate professor Noll, assistant professors Ennis, Zuhar

Courses Primarily for Undergraduates
6811 Basic Typewriting 3 s.h.
6812 Business Typewriting 3 s.h.
6813 Beginning shorthand 3 s.h.
6814 Advanced shorthand 3 s.h.
6815 Transcription 3 s.h.
6821 Executive secretarial procedures 3 s.h.
The program requires a total of 30 semester hours and a thesis, or 36 hours in the nonthesis program. An oral defense of the student's M.A. thesis is required of those choosing the thesis option. Those choosing to do two seminars and papers will be given oral examination over that material.

Doctor of Philosophy

The Ph.D. program has three components, a coordinated sequence of core courses, a set of major area courses and the writing of a dissertation. The core areas are microeconomic theory, macroeconomic theory, mathematical economics and econometrics. The core itself is comprised of 10 courses designed to be taken in a specific sequence. The academic loads of nine to 16 semester hours in this sequence presuppose that the student is employed as a research or teaching assistant. Those who are not may carry additional courses. The Graduate College requires 72 semester hours of graduate credit for a Ph.D.

Graduate Programs

Admission Requirements and Procedures

The general admission requirement is a bachelor's degree from a college or university in good standing. The minimum overall grade-point average for admission is 2.5 (A=4) for the M.A. program and 2.7 for the Ph.D. program. Each applicant also must submit scores from the Graduate Record Examination. A copy of Test and three letters of recommendation. Minimum prerequisites for entry into the Ph.D. program also will normally include two semesters of calculus and one semester of linear algebra. The linear algebra course may be taken during the summer preceding entry into the Ph.D. program. Knowledge of this material will be presupposed throughout the Ph.D. program.

Master of Arts

The M.A. degree is designed as a terminal degree. Incoming students who find that they wish to earn the Ph.D. but who are initially undecided are advised to enroll in the Ph.D. program so that both degrees remain open to them.

Terminal M.A. Program

There are four distinct areas to be satisfied: economic theory, economic history, quantitative economics and a field area. Courses in these areas are

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>6E201</td>
<td>National Income</td>
<td>3</td>
</tr>
<tr>
<td>6E202</td>
<td>Price Theory</td>
<td>3</td>
</tr>
<tr>
<td>6E207</td>
<td>History of Economics</td>
<td>3</td>
</tr>
<tr>
<td>6E262</td>
<td>Economic History of North America</td>
<td>3</td>
</tr>
<tr>
<td>6B181</td>
<td>Quantitative Analysis</td>
<td>3</td>
</tr>
<tr>
<td>6B112</td>
<td>Business Statistics</td>
<td>3</td>
</tr>
</tbody>
</table>

Field

Three electives 3 s.h. each thesis 4 s.h.

by

four electives 3 s.h. each two seminars and papers 3 s.h. each
faculty direction must be approved by the faculty (through the graduate director in consultation with the graduate advisory committee). The student must maintain a 3.2 grade-point aver-
age or better in the final courses. A student earning a low grade in a final course may repeat the course the next time it is offered and have the grade earned the second time replace his or her earlier grade for Departmental purposes.

Examination Sequence and Dissemination Procedure

The qualifying examination is given following the end of the first spring semester and again one week before fall semester of the second year and takes six hours to complete.

The written qualifying examination will cover economic theory, mathematical economics and statistics. The purpose of the examination is to determine which students may continue for the Ph.D. degree and which students should complete a terminal M.A. program. A student who fails will be asked to complete qualifications for a terminal master's degree. A student with a grade of "marginal" will be asked to resit the exam the following fall, to pass or to fail.

Comprehensive Core Examinations

Comprehensive core examinations are given two weeks after the end of the spring semester in the second year, and one week before fall semester of the third year. It, too, is a six-hour exam.

The written comprehensive core examination covers the core area of economic theory, mathematical economics and econometrics. A student who fails will be asked to complete qualifications for a terminal master's degree. A student with a grade of "marginal" will be asked to sit for the complete set or various parts of the exams the following fall, at which time he or she may receive a grade of pass or fail.

Comprehensive Examination

A thesis seminar will be held in which students who are working on their dissertations will participate. This seminar will not be a numbered course but an ad hoc forum convened as required. The student will complete the oral comprehensive examination by presenting a thesis proposal before this seminar to the satis-action of a committee of five members of the faculty appointed for the occasion by the graduate director. Successful completion of this seminar, of the core examinations and of the major area courses with an acceptable grade-point average would result in the student's admission to candidacy for the Ph.D. degree.

Dissemination Examination

An oral examination in defense of the dissertation research is required.

Teaching and Research

Teaching and/or directed research are a required part of the graduate program. The program is designed to bring all students to a uniform high level of technical competence through the core sequence and then to allow them, under faculty guidance, to design a personalized sequence of courses within their major area.

Staff: professors Costantini, Krause (Murray Professor), Lloyd, Morgan, Nordquist, Pack, Wc, professor emeritus Olson; associate professors Albrecht, Balch, Barnard, Jeffers, Pogue, Ruffin, Siebert, Squire, Swanson, associate professors Denis, Joseph, Rediach, Wieselt, Williamson.

Courses Primarily for Undergraduates

Note: GE1 and GE2 may be taken in either order or they may be taken simul-
taneously. They satisfy social science core requirement for B.A. and B.S. students.

611 Principles of Economics

Organizational and historical development of economic system, role of markets, prices and competition in promotion of economic welfare; regulatory function of business and labor; provision of public goods (public, private, external; property and distribu-
tion of wealth, economic factors in total environment; alternative economic sys-
tems; prehistoric satisfaction of University rhetoric requirement.

612 Principles of Economics

National income and output, employment and prices, money and credit, govern-
ment finance, monetary and fiscal policy, economic growth and development, international relations, economic systems, prerequisite qualifications of University rhetoric requirement.

Economic Analysis and Policy

6100 Microeconomics

Sale of GE10, with additional prerequisite of one semester of calculus.

6101 Microeconomics

Economic theory of consumer behavior, producer behavior, and role of markets in coordinating economic decisions, conditions for efficient resource allocation by market mechanisms; prerequisites: GE1 and GE2 or senior standing.

6104 Macroeconomics

Sale of GE10, with additional prerequisite of one semester of calculus.

6105 Macroeconomics

Measurement, theory, and control of aggregate economic activity; prerequisites: GE1 and GE2 or senior standing.

6106 Price and Employment Theory

Role of markets and price determination under various conditions; national income analysis, employment, growth and economic policy; alternative economic systems; not open to students with previous economics courses prerequisite senior or graduate standing.

6111 Labor Economics

Impacts of industrialization on labor markets with analysis of resulting labor problems; macroeconomic aspects of labor and bargaining, wages and fringe benefits, work-
ing hours and conditions, and economic transitions; role of labor market institu-
tions in economic progress; prerequisites: GE1 and GE2 or senior standing.

6119 Economics of Human Resources

Readings in recent application of economic concepts to human behavior considered as economic resource, including specific issues of the 20th century such as social security, family planning, poverty, population growth, etc.

6117 Monetary and Fiscal Policy

Institutions, theory, practice and policy; prerequisites: GE1 and GE2 or senior standing.

6119 Economics of the Government Sector

Economic functioning of government and its allocation of resources for the public sector, principles of income and wealth distribution, impact of government expenditures and policies upon allocation of resources, distribution of income, and economic growth and stability; prerequisites: GE1 and GE2 or senior standing.

6130 International Economics

Foreign exchange and balance of payments; international monetary arrangements and policy; principles of international trade; effects of tariffs and restrictions on free flow of domestic and international commerce; prerequisites: GE1 and GE2 or senior standing.

6133 Economic Growth and Economic Change

Chapters of modern growth theory and economic change; major proposals for speeding up development; prerequisites: GE1 and GE2 or senior standing.

6135 Economic Growth and Environmental Decay

Causes and consequences of economic growth in more developed countries; ele-
Administrative Staff

Dean Donald J. Galgano
Associate Dean and Coordinator of Research: Jesse Hayden, Jr.
Director of Clinics: C. Frederick, Jr.
Coordinator, Student Affairs: and
Director, Continuing Education: Ralph C. Appleby
Librarian: Margaret R. Amstutz

The College of Dentistry is both administratively and physically an integral part of the University. It draws upon and contributes to the University's diverse resources, and its students enjoy all the advantages and privileges enjoyed by the general student body. The College benefits particularly from its cooperative relationship with the colleges of Medicine, Nursing and Pharmacy in the University Health Center, whose teaching, research and service activities have earned international recognition.

Basic Program in Dentistry

The basic educational program leading to the degree, Doctor of Dental Surgery (D.D.S.), occupies three years of preprofessional study and four years of study in the College of Dentistry. The dental curriculum consists of five basic units:

Basic Sciences

Gross, general radiographic and developmental anatomy; gross anatomy; biochemistry; general microbiology; physiology; general pathology; oral pathology; pharmacology; microbiology; clinical pathologist; oral biology

Restorative Dental Sciences

Gross, microscopic and radiographic dental anatomy; dental materials; endodontics; operative dentistry; fixed partial prosthesis; removable prosthesis

Oral Medicine

Physiology of mastication; introduction to diagnosis and therapy; preventive dentistry; oral diagnosis; dental radiology; abnormal anatomy and pain control; oral surgery; periodontal; internal medicine; therapeutics; bioclinical conference

Community Dentistry

History; history of dentistry; biology and the scientific method; research design and planning; epidemiology; nutrition; preventive dentistry and community health; principles of human behavior; dental economics; dental jurisprudence; practice management

Pediatric Dentistry

Facial growth and development; periodontics and orthodontics

To achieve a close correlation of the basic sciences with clinical disciplines, the student is introduced to actual clinical work during the freshman year.

The sophomore program includes comprehensive training in the effective coordination of ancillary personnel. Classroom instruction in this area is followed by practical experience offered in conjunction with the dental hygiene program. Junior dental students rotate through a series of "clerkships" which give them meaningful exposure to each of the eight clinical disciplines.

Senior dental students are involved in the delivery of comprehensive dental care in an environment which closely simulates conditions in private dental practice. Seniors also are exposed to various extramural health programs at state and University Hospitals and the State Department of Health.

The curriculum provides a summer preceptorship in which senior dental and dental hygiene students assist in selected dental offices throughout Iowa. The preceptorships expose students to facets of dentistry usually not observable in an academic setting, such as practical business management procedures, appointment-book control, the dynamics of presenting treatment plans to private patients and the relationship of the dentist to the community.

Special Programs

Enrichment

A dental student may satisfy Departmental requirements by examination in lieu of course participation. The student thus gained may be used for participation in the College's enrichment program. A student who qualifies for the program must maintain a satisfactory level of achievement to remain in the program. An enrichment program may consist of electives taken for credit, advanced clinical training, research or any combination of these activities. It may also provide a means to fulfill some Graduate College requirements, if the student's objective is a combined Dentistry-Graduate College degree.

Teacher Training

In close cooperation with the Graduate College and the colleges of Education and Liberal Arts, the College of Dentistry offers one of the few programs preparing dentists to become professional educators. The program combines graduate-level coursework in dentistry, education and the liberal arts, with supervised teaching experience and research in the College of Dentistry. It leads to a master's degree in education or a minor. Each student's course of study is tailored to individual abilities and interests. The student may elect to emphasize coursework and supervised practice teaching in any of the restorative dental sciences and
may choose among four areas of development in education—educational psychology, higher education, educational media or student personnel.

Facilities
The new Dental Science Building, a major unit in an expanded Health Center, enables the College to double its enrollment and accelerate its research activities, and facilitates the development of interdisciplinary communication in Health Center teaching, research and patient-care activities. The Health Center campus includes a new Basic Science Building, a new Health Sciences Library and a new College of Nursing. The Health Sciences Library will house all of the University's special health science holdings, including the College of Dentistry's collection of more than 10,000 volumes on dentistry and allied scientific subjects, and the more than 283 professional journals the College currently receives.

The Dental Science Building comprises separate but connected four-story wings located on either side of a mall. The south wing will be devoted to clinical teaching, with various Departmental clinic facilities, support laboratories, clinical research space, offices, mechanical rooms and an automated learning center. The north wing will house a variety of teaching, administrative and research facilities, including teaching laboratories, research laboratories, administration area, an audiovisual production center and the program in community dentistry.

Admission
The closing date for applications and credentials is February 15 for the class entering the College of Dentistry the following September. Applicants are urged to file the completed application and the necessary officials transcripts as soon as possible after July 1 of the year preceding the year in which they wish to enter.

The prospective dental student is encouraged to complete a program leading to a standard bachelor's degree before entering dentistry or to consider a combined program which enables him or her to earn a standard bachelor's degree upon completion of the freshman year in dentistry. Preference will be given to applicants who have a bachelor's degree or who have completed requirements for the degree in a combined program.

General Basis for Admission
The college course outlined below meets the basic academic requirements for admission to the College of Dentistry. Each applicant must submit to the Office of Admissions the completed application form and official transcripts from all colleges attended.

College Credit
The college curriculum should include at least three academic years of accredited work comprising less than 96 semester hours and including these required courses:

Physics
One year (equivalent to eight semester hours), of which one-fourth must be laboratory work

Chemistry
Two years (equivalent to 16 semester hours), including one year (equivalent to eight semester hours) of organic chemistry, with appropriate laboratory work in all courses, of which one-fourth must be laboratory work

Biology
One year (equivalent to eight semester hours); this requirement may be satisfied by a one-year course in either general biology or zoology and botany (not botany alone), but in all cases one-half of the credit must be for laboratory work

Electives
Additional courses to total at least 96 semester hours; chosen electives should give the applicant a well-rounded educational background; they should be selected from courses in the social sciences, philosophy, psychology history, foreign languages, higher mathematics or chemistry

The Dentistry admissions committee may waive or reduce some of the above requirements when the candidate for admission is considered outstanding in other respects. In exceptional circumstances, candidates with fewer than three years of college work will be considered for admission if the applicant's performance and potential for dental proficiency are considered outstanding. These candidates will be required to take the Graduate Record Examination Aptitude Test as well as the Dental Admission Test. In these instances, assessment of the candidate's performance on the Graduate Record Examination will be included in the evaluation by the admissions committee of the applicant's credentials for entrance in the College of Dentistry.

The applicant should have a cumulative grade-point average of at least 2.5 (A=4). Since the quality of coursework in preclinical science is basic to success in dentistry, the admissions committee gives special consideration to such coursework.

Interview
Personal interviews may be required of applicants for admission to the College of Dentistry.

Required Dental Admission Test
All applicants must complete the Dental Admission Test sponsored by the Council on Dental Education of the American Dental Association.

Tests are given three times annually, and The University of Iowa is a testing center. Applicants for admission to The University of Iowa College of Dentistry are urged to complete the examination in the previous October to enable the admissions committee to begin its selection in December. Applicants who have completed more than one year of preclinical work are urged to take the examination in the preceding April.

All applicants for admission to the College of Dentistry should obtain application forms for the required test from the the Uni-
University or the American Dental Association. Test applications
should be submitted well before the test deadline.

Deposit by Accepted Applicants
An accepted applicant must submit the required $50.00 deposit
within 30 days after notification of favorable action on his or her
application. This deposit is not refundable but is credited toward
the first year payment. An applicant who fails to make the deposit
within the specified period forfeits a place in the entering class.

Physical Examination
Applicants accepted for admission are required to submit a satis-
factory physical examination report to the University Student
Health Service within two weeks following notification of accep-
tance.

Advanced Standing
Applications for admission with advanced standing are consid-
ered on the basis of their individual merit and availability of
space in a given class.

Combined Liberal Arts-Dentistry Course
The program for acceptance by the College of Liberal Arts of
30 semester hours of elective credit earned in any other college
of the University makes it possible for the student who enters
the College of Dentistry to obtain the bachelor's degree from the
College of Liberal Arts upon successful completion of the freshman
year in dentistry. To take advantage of this plan, the student
must fulfill all specific requirements for the bachelor's degree,
including the requirements for a major in some department or
area of concentration. The successful completion of the last 30
hours in the College of Liberal Arts preceding enrollment in the
College of Dentistry satisfies the College residence requirement.

Additional Admission Considerations
Pursuant to the specific requirements listed for admission does
not in itself assure admission to the College of Dentistry. From the appli-
cants meeting minimum requirements, the admissions commit-
tee selects those who appear best qualified for the study and
practice of dentistry. The committee considers applicants' aca-
demic average, the scores on the required Dental Admis-
sion 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 applications from nonresidents of Iowa, preference will be
given to nonresident applicants having the highest scholastic
standing.

Graduation Requirements
Promotions and Graduation
Student promotions and graduation are determined by the re-
spective class performance committees appointed by the dean
from among faculty members involved in coursework offered
during a given academic year. A minimum cumulative grade-
point average of 2.0 is required for promotion and graduation.
However, the performance committee may recommend that a
student withdraw from the College of Dentistry or repeat an
academic year, regardless of his or her grade-point average,
when the student is deemed generally unfit to be prosecuted or
to enter the dental profession.

Committee on Appeals
This ad hoc committee is appointed by the dean from the faculty
of the College and is chaired by the dean or his designated
representative. The committee considers such matters as student
scholastic achievement, promotion, absences and general fitness
to enter the dental profession. This decision reached by the com-
mittee is final.

State Board of Examination
All states require an examination before a board of dental
examiners in license of a license to practice. Iowa law
provides for two examinations yearly by the Iowa State Board
of Dental Examiners. These are given on dates coinciding with
the time of graduation.

Expenses
Students are given an opportunity to rest most of their dental
instrument from the College of Dentistry. The rental fee
amounts to $300 per year. In addition, charges are assessed for
expendable laboratory supplies, averaging approximately $150
per year for the first two years, and a $150 breakage for which
is refundable upon graduation or termination of enrollment.

Financial Assistance
Under the Health Professions Scholarship and Loan Programs,
dental students may borrow up to $5,500 each year of
their undergraduate professional studies. Eligible students may
also apply for federal scholarships. Preference is given to stu-
dents who would not otherwise be able to finance health profes-
sion study. Loans are issued at low interest rates and are repay-
able over an extended period of time after the recipient
completes the course of study. There are also provisions for
government of portions of the loan in consideration of the gradu-
ate's selection of location of service in an area where there is a
shortage of dentists.

A number of short-term loans are available from the Ameri-
can Dental Association, the Iowa Dental Association, the Kal-
log Foundation, the Iowa Dental Achievement Fund and other
sources, to help students in emergency situations.

Dental students are also eligible for many of the assistance
provided through the University's Office of Student Financial
Aids. This includes assistance for part-time employment.

For further information on financial assistance available to
dental students, see the "Scholarships and Loans" section of the
Catalog or direct an inquiry to the Office of Student Financial
Aids.

Student Organizations
All dental students automatically have membership in the
American Student Dental Association. Students who rank in the
upp 12 percent of the senior class are eligible for Omicron Kappa Upsilon, national scholastic honorary dental society. Two national dental professional organizations, Delta Sigma Delta, and Psi Omega, have chapter houses at Iowa, and both have women’s auxiliaries. There is also a Dental Student Wives Club.

Admission to Graduate and Postgraduate Study

Programs of study leading to the Master of Science degree are offered by the College of Dentistry’s departments of Fixed Prosthodontics, Dental Hygiene, Preventive Dentistry, Operative Dentistry and Endodontics, Oral Diagnosis, Oral Pathology, Oral Surgery, Orthodontics, Pedodontics and Periodontology. Admission to any of the graduate programs requires satisfaction of all requirements for admission to the Graduate College, possession of the Doctor of Dental Surgery degree or its equivalent, and departmental approval. Departments also offer postgraduate programs of study designed as preparation for clinical specialty practice. These programs are one year or more in length, but do not lead to an academic degree. Prerequisites for admission to the postgraduate programs are the same as for graduate programs. A certificate is awarded upon satisfactory completion of the postgraduate program.

Preclinical Sciences

Courses

Following are required science courses offered by departments in college other than dentistry for undergraduate dental students.

17145 The Science of Nutrition 2 a.h.

19321 Stress Anatomy for Dental Students 2 a.h.
Introduction to stress anatomy, emphasis on head and neck. Graduate students must have consent of Department head.

82102 Microscopic Anatomy for Dental Students 5 a.h.
Cells, tissues, and organ development of head and neck structures.

81180 Dental Morphology (Bacteriology) 5 a.h.
Anatomy, physiology, and development of the mouth.

82213 General and Systems Pathology for Dental Students 4 a.h.
Study of system organization and function, including the basic sciences.

72151 Pharmacology for Dental Students 3 a.h.
Lecture, laboratory, and practical work in drug actions and use.

72181 Operative Physiology 6 a.h.
Lecture and laboratory, general principles and detailed treatment of various tissues, 150 clock hours, laboratory.

56161 Biostatistics 4 a.h.
Chemical constituents and reactions of living matter; 75 clock hours, laboratory.

Dental Hygiene

See "College of Liberal Arts".

Fixed Prosthodontics

Department Head: Kent E. Thayer

Degree offered: M.B.

The primary purpose of the Master of Science program is fixed prosthodontics is to train and prepare dentists for careers in College of Dentistry/Fixed Prosthodontics/Dental education and/or dental research. It is also adaptable for individuals wishing to further prepare themselves for private practice in fixed prosthodontics. The program satisfies the formal training requirements for eligibility for the American Board of Prosthodontics examination.

The graduate student, in cooperation with the head of the Department and/or the advisor, constructs an individual curricular for his or her program which best fulfills personal interests, goals and desires while meeting all of the minimum requirements of the Department of the College and the Graduate College necessary for the awarding of the master’s degree. This type of individual attention is possible since two graduate students are normally accepted into the program each year.

Admission

The minimum requirements for admission into the program correspond to the minimum requirements for admission to the Graduate College of the University. In addition, the student must hold a D.D.S. or D.M.D. degree or its foreign equivalent.

No advanced GRE is required.

Degree Requirements

A research project and thesis are required for the master’s degree in fixed prosthodontics. The major emphasis of coursework is in fixed prosthodontic theory and treatment with some minor courses in other specialties of dentistry. A course in research methodology as well as a course in statistics or elementary statistical inference in medicine is required. Some coursework in the general area of education or in one of the basic science areas is also required. Oral and/or written exams are given during the regularly scheduled graduate degree exam period each year.

Any student who is unable to maintain the minimum 2.5 grade-point average during the first year of the program, or those individuals who elect to terminate their program after one year, will be considered for issuance of certificate of attendance. Each student will be required to submit a manuscript suitable for publication in a nationally recognized professional journal, based upon the student’s research work or thesis topic. He or she will be required to prepare one additional manuscript for publication on another topic.

Staff: Professor Thayer; professor emeritus Herrick, associate professor emeritus Kern, assistant professors Fritz, Krakht, Sware

Courses

12101 Introduction to prosthodontics 2 a.h.

12107 Fixed Prosthodontic Techniques 2 a.h.

12109 General Practice equipment and techniques, including equipment, materials and techniques used in construction of fixed prosthodontic crowns and bridges.

12108 Fixed Prosthodontics/Technology Laboratory 4 a.h.

12116 Dental Materials 1 a.h.

12128 Reviews of basic physical and clinical properties that apply to materials used in dentistry; relationships of chemical and molecular structure to physical and mechanical properties.

12133 Fixed Prosthodontics 4 a.h.

Students completing previously acquired knowledge in biological and basic science and technical coursework with theoretical prosthodontics coursework in Dental Hygiene supplemented by individual supervision and demonstration.
Operative Dentistry and Endodontics

Course Requirements for Graduates

B11111 Oral Rehabilitation and Gerodontics
1 s.h.
Lectures dealing with operative or involved reconstruction of the oral apparatus and with emphasis on the care of dental patients in such situations.

Courses Primarily for Graduates

B12300 Fixed Prosthodontics Literature Review
or. or.
Assigned readings and references of bibliography and debate
B13301 Technical Methods of Fixed Prosthodontics
or. or.
Advanced review of technical procedures
B13302 Advanced Clinical Fixed Prosthodontics
or. or.
Student completes assigned cases in sequence of difficulty
B13303 Research Design and Collecting of Data as Related to Research Project
or. or.
B13404 Seminar: Fixed Prosthodontics
or. or.
Conferences and discussion on assigned topics
B13405 Pre-dissertation Teaching: Fixed Prosthodontics
or. or.
For students wishing to enter field of clinical education; teaching obligations as negotiated with faculty
B13600 Thesis Preparation: Fixed Prosthodontics
or. or.
Prepared in accordance with regulations of Graduate College

M. S. Program in Endodontics

The program in endodontics is designed to provide a level of training which will lead to a career in research, teaching, and/or specialization in the clinical practice of endodontics. Applicants must be graduates of recognized dental schools, and foreign students must demonstrate proficiency in the use of English. Unless the preparatory training of the candidate includes sufficient work in mathematics and chemistry, it will be necessary to complete these studies through differential calculus, statistics and quantitative analysis before undertaking a research project. Completion of the program will usually entail two calendar years of full-time effort. The applicant must be financially prepared to pursue studies without interruption. In compliance with basic Graduate College regulations for programs in Dentistry, these degree requirements must be met:

A. 30 semester hours in the major field of clinical endodontics and selected courses offered by the departments of the College of Dentistry

B. 10 semester hours in a minor field of biochemistry, physiology or microbiology

C. 10 semester hours in the contributing areas of microchemistry, mathematics, statistics and analytical chemistry

- Preparation of an acceptable thesis based on original research; not less than 16 semester hours of research credits and eight semester hours of thesis preparation credit may be counted in satisfying the 48 semester hour minimum for the degree

- Satisfactory performance in a comprehensive written and oral examination which is of a functional character and does not duplicate semester examinations

The director of the degree program will act as the student’s adviser and as chairman of the examining committee.

M. S. Program in Operative Dentistry

The program in operative dentistry is designed to prepare the student for a career in teaching and research. Since operative dentistry is not a specialty area of dentistry, course arrangement of the graduate program can be quite flexible. The student has considerable freedom to pursue courses of advanced study of particular personal interest. Excellent courses of study have been arranged in the biological sciences, material sciences and education.

An applicant for this program must be a graduate of a recognized school of dentistry and must comply with the requirements for admission to the Graduate College of the University. An interview with the applicant may be requested.

In addition to Graduate College requirements for advanced degree programs, those Departmental requirements must be met:

- Satisfactory completion of 48 semester hours of graduate-level courses. These may be distributed as follows:
  A. 20 semester hours of graduate-level courses in the College of Dentistry; these may include clinical dentistry and practice teaching
  B. 20 semester hours of graduate-level courses in other areas of the University; these should include courses in statistics and education
  C. Eight semester hours in original research and thesis preparation

- Preparation of an acceptable thesis based on original research. The student should plan to furnish his or her own financial support for the research and thesis

- Formal defense of the thesis and examination of the candidate by examining committee. The director of the degree program will act as adviser to the student and as chairman of the examining committee.

Staff: professors: Bjorndal (director, Endodontics), Johnson (director, Operative Dentistry), professor emeritus: Witsch, associate professors: Chau, Kwon, associate professors: Denchy, Fuller; instructors: Leman, Hatch, Torney, Leuck

Teaching assistants: associate professor: Kilby, assistants: professors: Lewis, Logan
to undergraduate students in dentistry, and operates a laboratory fully equipped for hand-tissue research.

Staff: Professor Soni, associate professor Webster, assistant professor Mackenzie, SoA

Courses

93101 Oral Biology 2 a.h.
Recent advances in oral biology: dynamic concepts of micronized tissues; prevention of oral diseases; fluorides and their role in caries inhibition
93102 Oral Biology 2 a.h.
Lectures, seminars, laboratory: physiology of oral cells; speech pathology; clinical evaluation
93103 Problems or arr.
Small research projects pertaining to recent developments in oral biology

For Graduates

93201 Mineral Metabolism and Dental Caries 2 a.h.
Structure in relation to disease and treatment of bone substances in relation to normal and abnormal dental tissues
93202 Physiology and Structure of Bone 2 a.h.
Metabolic physiology, physiology of bone; reference to enamel and mandible; development of growth; maintenance; functional adaptation of bone tissue in pathological states such as development of disturbances, inflammatory diseases, distribution of melanoma, cancer
93203 Topics in Oral Biology 2 a.h.
Selected recent developments in oral biology
93204 Research Techniques in Oral Biology 2 a.h.
Inclusion theory and practice of preparation of tissues for light microscopy preparations; clinical photography and techniques used in clinical photography
93205 Research in Oral Biology or arr.
93206 Biology of the Periodontium and Pulp 3 a.h.
Selected structures of periodontium and pulp: their growth and development
93207 Practice Teaching 2 a.h.
Supervised practical experience in dentistry and laboratory teaching

Oral Diagnosis

Jethro Division Head: J. D. Whitnand
Degree offered: B.D.S.

The primary objective of the Division of Oral Diagnosis is to provide basic instruction for dental students and other health profession students in methods of completion of oral diagnosis and preparation of an adequate treatment plan for the patient. These objectives are met through a system of lectures, seminars and clinical instruction beginning with the extended summer program of the freshman year and continuing through the junior and senior years of the dental curriculum. In addition to the didactic and clinical program for freshmen, sophomores and junior students in oral diagnosis, the Division is responsible for the Bioclinical Conference course, whose objective is to enable the student to solve problems arising in the course of clinical practice that are being performed in the dental office situation. This provides training for the student in a situation similar to those encountered if he or she is admitted for staff privileges in any recognized hospital program. At the present time oral diagnosis is not recognized as a specialty of the field of dentistry. However, the master's degree program is structured so that should oral diagnosis become recognized as a specialty in dentistry at a later date, all candidates who have completed the Master of Science degree program in the Division will meet the requirements which may be anticipated in a specialty program.

In addition to serving the institutional needs in undergraduate and graduate programs, the Division serves as a screening and diagnostic area for all patients entering the College of Dentistry for treatment. This service is vital to the maintenance of an adequate patient load for the other clinical teaching facilities of the College.

Master of Science Degree with Thesis

All candidates for the Master of Science degree in oral diagnosis are required to pursue a course meeting the minimum requirements of the Graduate College. No provision is made for pursuit of a Master of Science degree without a thesis. The candidate is expected to develop substantial ability in research in his or her selected field of endeavor, and the area of research must be applicable to the general field of oral diagnosis. Minimum requirements for the completion of the thesis are 24 months of work in a full-time graduate program enrollment. This will include a minimum of 40 semester hours of acceptable graduate credit in courses outlined by the staff of the Division of Oral Diagnosis. Determination of the qualification of the candidate for the degree of Master of Science will be made by a final comprehensive oral examination in accordance with the rules of the Graduate College.

Admission Requirements

The size of the Division staff and facilities limits the number of applicants who may be accepted for the Master of Science degree program. Therefore it is necessary that each prospective applicant discuss the opportunity for enrollment with the Departmental executive prior to submission of an application for admission to the Graduate College. The minimum requirements for admission to this program are those of the Graduate College. The final decision on acceptance of any applicant meeting minimum requirements for the Master of Science degree program will rest with the Division staff of Oral Diagnosis.

Staff: associate professor Whitnand; assistant professor Erbe, Pilling, Hammond; instructors Horton, Kienle, Merewitz, Spyk

Courses

Admissions

93107 Ethics and Practice Management 1 a.h.
Ethical concepts and professional relationships between doctor and patient, 16 clock hours, junior year
93108 Practice Management II 1 a.h.
Organization and management of dental office with applications of accounting and budgeting, 16 clock hours, junior year
93109 Clinical Practice 1 a.h.
Supervised clinical experience in dental screening and restorative procedures; diagnosis and treatment of common patient problems and restorative procedures of patients; 32.5 clock hours, senior year

Dental Radiology

93110 Dental Radiology for Dental Hygiene Students 1 a.h.
Lecture and instruction in X-ray techniques, radiation hazards, films, recording and measuring, 16 clock hours, first year
93111 Clinical Dental Radiology for Dental Hygiene Students 1 a.h.
Supervised clinical experience in taking dental radiographs, 16 clock hours, second year
Oral Pathology

Department head: Allen K. Fisher
Deans offered: M.B.

The main objectives of the Department of Oral Pathology are to provide basic instruction in oral and maxillofacial biology and to prepare students for careers in teaching and research. A program leading to a Certificate in Oral Pathology is offered to graduates of dental schools desiring clinically-oriented training in preparation for specialized practice of oral pathology. The M.S. program is a longer and more comprehensive one, and includes research training.

The laboratory diagnostic service which the Department of Oral Pathology provides for the faculty of the College of Dentistry contributes extensively to all phases of the Departmental educational effort. The laboratory is well equipped for work in histologic anatomy, hematology and selected bio-chemicals in clinical chemistry. Special facilities for studies in histology and pathologic tissue metabolism are used mainly by graduate students and staff research. Additional training, particularly in pathologic anatomy, is available in the College of Medicine Department of Pathology in which the Department of Oral Pathology faculty members hold joint appointments.

Admission Requirements

The size of the Department's staff and facilities limits the number of applicants who can be accepted for programs leading to degrees in Oral Pathology. Therefore, it is necessary that each prospective student consult the Department directly and request acceptance prior to submission of an application for admission to the Graduate College. Minimum requirements for admission to either program are a cumulative grade-point average of 2.70 and satisfactory scores in the Graduate Record Examination: Academic Aptitude Test and in the Advanced Test on either biology or chemistry. Final decision on acceptance of any applicant meeting the minimum requirements for admission will rest with the Departmental staff.

Certificate in Oral Pathology

This program combines academic studies with extensive laboratory practice of oral pathology under staff supervision, and requires a minimum of 24 credits in full-time work for completion. Qualifications for the certificate include completion of all required courses within a five-year period. Demonstration of satisfactory competence in the practice of oral pathology and a satisfactory grade in a final comprehensive oral examination before an examination committee composed of members of the graduate faculty in the departments of Pathology and Oral Pathology.

Although additional courses may be elected if circumstances permit, the required courses in this program are:

- 69:203 General and Systemic Pathology
- 85:206 Oral Pathology
- 37:211 Cytology
- 68:200 Basic Oral Microbiological Science
- 99:165 General Biochemistry
- 99:265 Clinical Biochemistry
- 85:206 Advanced Oral Pathology
- 85:207 Advanced Clinical Pathology

Master of Science Degree with Thesis

Candidates for the Master of Science degree are expected to develop substantial laboratory research experience into the mechanisms of prostatic disease and should anticipate that considerable effort will be devoted to completion of an original research project and the thesis which will be based upon it.
The nature of the research project, and some of the courses which constitute the tools for research and for the informed practice of oral pathology, dictate prerequisites in mathematics, quantitative analysis and physical chemistry. When students are admitted to this program without these prerequisites they will be required to complete mathematics through calculus and at least one semester of physical chemistry set later than 18 months after beginning the program. Applicants who have not earned doctorates in health sciences are also required to show evidence of equivalent training in the sciences contributory to pathology. Minimum requirements for completion of this program are 36 months of full-time work and 50 semester hours of acceptable graduate credit.

The required courses are:

4:111  Analytical Chemistry  3 s.h.
4:193  General and Systemic Pathology  4 s.h.
4:221  Oral Pathology  4 s.h.
3:711  Cyology  4 s.h.
3:719  Fundamental Genetics  4 s.h.
3:820  Basic Otolaryngologic Science  4 s.h.
3:221  Research in Oral Pathology  10 s.h.
3:248  Bacteriology  3 s.h.
9:965  General Biochemistry  3 s.h.
9:967  Experimental Biochemistry  3 s.h.
9:962  Clinical Biochemistry  3 s.h.
6:146  Diagnostic Microbiology  5 s.h.
3:520  Advanced Oral Pathology  6 s.h.
3:525  Advanced Clinical Pathology  8 s.h.
3:528  Research in Oral Pathology  10 s.h.

Evaluation of the qualifications of candidates for the Master of Science degree or for that degree and the Certificate in Oral Pathology will be determined by final comprehensive oral examination in accordance with the rules of the Graduate College. The examination committee will be composed of members of the graduate faculty from the departments of Pathology and Oral Pathology and one additional member of the graduate faculty representing the science other than pathology which provided the major portion of the research and/or scholarship to the thesis. The examination will relate to the candidate's knowledge of basic pathologic processes and to the thesis. It will also cover the practices of oral pathology if the candidate is to be considered for the Certificate in Oral Pathology.

Staff: profs. Fisher, Tule, assistant profess. Shala, Hammond

Courses

39000 pathology for Dental Hygienists  2 s.h.

development of informed assistance of clinical diagnosis between dental and pathological organs and issues general understanding of principal basic sciences involved in significant diseases of mouth, subject matter include degenerations, alterations, infiltration, wound healing, developmental abnormalities, cysts, neoplasms, pyogenic and dental caries.

89:103 Clinical Pathology  4 s.h.

Clinical study and practice of diagnosis of medical diseases by laboratory methods and selected principles and techniques of physical examination, instruction limited to small group of sciences under special conditions emphasis placed on these procedures adaptable to clinical practice, practical experience provided by in-service assignments in Clinical Laboratory.

89:240 Oral Pathology  4 s.h.

Lecture, conference, discussion, laboratory course devoted to diagnosis, treatment, correlation of oral organs, diseases endemic to mamalian system, hematopoesis, reparative processes, lymphatic and vascular structure, salivary glands, developmental abnormalites, neoplastic tissue proliferations, neoplasms, e.g., specific infections, allergic and inflammatory.

89:260 Advanced Oral Pathology  3 s.h.

Prerequisite: In addition to further and more intensive study of oral diseases involving specific organ, course in any semester is arranged to develop in general interest of student, bibliographic research, biologic analysis of oral pathology processes and diagnostic applications emphasized.

89:267 Advanced Clinical Pathology  3 s.h.

Prerequisite for graduation is intensive training in diagnosis by laboratory methods, guidance provided through tutorial relations and conferences with Departmental staff experience developed by participation in operations of Clinical Laboratory, pathology case conferences, and clinical and pathology examination.

Research in Oral Pathology  3 s.h.

Regulations in this course provide means of earning academic credit for research, study and preparation of thesis. Required for candidates for Master of Science degree and may be open to other qualified students who intend methods with available Departmental research facilities.

Oral Surgery

Department: Head: Mark L. Hale
Degree offered: M.B.

The Department of Oral Surgery is involved in both the undergraduate and graduate education of dental students. It combines clinical and didactic training to an individual basis to the interests, abilities and development of the student.

The undergraduate program is based in the College of Dentistry, with some clinical assignments in the Department of Oral Surgery and Dentistry at University Hospitals. Graduate study is based primarily in the Residency Training Program at University Hospitals.

The facilities of the University’s Health Center complex provide an appropriate environment for graduate training in oral surgery.

The graduate program takes an individual approach, encouraging and directing the student to attain fundamental concepts of oral surgery as a basis not only for specialty training but also as preparation for investigation, teaching and clinical service through professional growth.


Courses

(F) graduate course descriptions, see "College of Medicine"

89:122 Anesthesia  1 s.h.

Principles and techniques or use of regional anesthesia, 16 clock hours, 4 academic quarters.

89:124 Oral Surgery I  3 s.h.

Basic principles of oral surgery, indications and contraindications for extractions, evaluation of effects of patient’s related medical history, 16 clock hours, 4 academic quarters.

89:125 Oral Surgery II  3 s.h.

Techniques of maxillary and minor oral surgery procedures, 16 clock hours, clinical experience confined to first assistant in oral surgery clinic, 80 clock hours, junior clerkship.

89:126 Oral Surgery III  3 s.h.

History, examination, diagnosis and treatment of diseases and traumatic injuries of the mouth, 16 clock hours, second year, first semester.

89:127 Oral Surgery IV  3 s.h.

Clinical experience in application of principles of oral surgery in surgery clinic at College of Dentistry, 16 clock hours, second year.

89:128 Oral Surgery V  3 s.h.

Clinical experience in application of principles of oral surgery in surgery clinic at College of Dentistry, 32 clock hours, second year.

89:129 Oral Surgery VI  8 s.h.

Clinical experience in application of principles of oral surgery in surgery clinic at College of Dentistry, 48 clock hours, second year.
Orthodontics
Department Head: George P. Andreasen
Degree offered: M.S. (Certificate of Orthodontics also offered)

Undergraduate Program
The purpose of the undergraduate program in orthodontics is to enable the general practitioner of dentistry to recognize, diagnose, and treat with competence simple malocclusions of the teeth.

Lecture courses guide the student in the learning of basic concepts of dental and facial growth, as well as treatment-oriented subject matter. In a laboratory course, diagnostic records are taken and evaluated and treatment appliances are fabricated. A volunteer program of clinical treatment of selected patients is supervised by the Department.

Opportunities exist for research and independent study in the Department.

The Graduate Program
The purpose of the graduate program in orthodontics is to educate specialists capable of diagnosing and treating with skill any malocclusion of the teeth requiring comprehensive care. The specialist should be familiar with and able to critically analyze biologic, biomechanic, diagnostic and treatment concepts in orthodontics. The majority of graduating specialists are self-employed in urban communities; a few are employed by the government and in education.

Satisfactory completion of a 24-month period of intensive study, including lecture courses, seminars, clinical practice, and a research paper qualifies a student for the Certificate of Orthodontics. If a student successfully completes a thesis based on an original research project, he or she will qualify for an M.S. degree in addition to the Certificate of Orthodontics.

Opportunities are available for research and independent study in the Department.

Admission requires the D.D.S. degree, or its equivalent, and satisfaction of Graduate College requirements.

Special facilities for research in biomechanics and craniofacial growth are available. Interaction with other departments provides learning and research opportunities in surgical orthodontics, cleft lip and palate treatment, speech pathology, animal experimentation and human growth.

Staff: professors: Webb; associate professor: Andreasen, Kreussen; assistant professor: Bihara, Suley; assistant clinical professor: DeKock, Thorburn, Hamman.

Courses
88104 Orthodontic Technique 1 cr. hour
Required procedures used in clinical orthodontics explained and performed in the laboratory, 40 clock hours
88105 Advanced Facial Growth 2 cr. hours
Growth changes in face and jaws and relationship to general body growth; effects of specific growth deviations on occlusion; principles of orthodontic diagnosis, 52 clock hours
88106 Biomechanics of Orthodontics 1 or 2 cr. hours
Biological and mechanical principles involved in treatment of malocclusal anomalies; 31 clock hours
88105 Preventive Orthodontics 1 cr. hour
Interceptive orthodontics with emphasis on individual case analysis; 16 clock hours
88106 Clinical Orthodontics 1 cr. hour
Clinical management of selected orthodontic patients

Primarily for Graduates
88201 Control Theory and Cerebrospinal Neoplasms 3 cr. or 5 cr.
Review of information on control systems involved in growth of human head; emphasis on contemporary and past work, mostly in animal species, involving manipulation of variables influencing development of the meningeal apparatus.
88202 Orthodontic Theory and Diagnosis 2 cr. hours
Emphasis on treatment of the anterior face and arch; investigation of anatomic, orthodontic, and facial skeletal variations, and causes of malocclusion, analysis of malocclusion, choice of malocclusion
88210 Diagnosis and Treatment Planning 4 cr. hours
Concepts of orthodontic treatment: prerequisites; 89210
88211 Advanced Orthodontic Technique 3 cr. hours
Laboratory course dealing with sophisticated orthodontic appliances
88216 Biomechanics 1 or 2 cr. hours
Fundamental principles of orthodontic relevant to clinical orthodontics
88219 Facial Growth 1 or 2 cr. hours
Development of face, including growth of bone and muscle tissues, from embryonic period to puberty
88220 Pediatric and Dental Growth 3 cr. hours
Continuation of 88219, emphasis on clinical applications of craniofacial growth and development to diagnosis, treatment and prognosis
88237 Case Analysis 2 cr. hours
Session dealing with analysis of clinical decision making, including discussion of rational and underlying principles of clinical orthodontic procedures utilized in North America and Europe
88238 Orthodontic Publications 2 cr. hours
Archival, critical, and current analysis of orthodontic publications
88239 Orthodontic Essay 2 cr. hours
Preparation of an essay, requires of all students working toward degree
88241 Research Orthodontics 3 cr. hours
Preparation of thesis 79142 and exam of 3 credits; required of all students working toward advanced degree
88242 Research Methodology 1 cr. hour
Scientific method; particular reference to collection, analysis and publication of research data
88265 Journal Club 2 cr. hours
Interpretative report of articles selected from orthodontic and related literature
88266 Practice Management 2 cr. hours
Principles of practice management covering office business methods, 88267 Office Management 2 cr. hours
Organization of dental units, dental auxiliary personnel, use of treatment planning
88268 Law Enforcement 2 cr. hours
Law and its relation to orthodontics
88269 Ethics in Orthodontics 2 cr. hours
Ethical considerations as related to orthodontic diagnosis and treatment

Pedodontics
Department Head: P. M. Farkas
Degree offered: M.S. (Certificate also offered)

The Department of Pedodontics is concerned with the prevention and treatment of dental diseases of children. A program of instruction combining didactic, laboratory and clinical experiences is offered to dental and graduate students. Special consideration is given to reviewing the current literature and managing the dental problems of handicapped children. Efficient treatment through the proper utilization of dental auxiliary personnel and record management is also emphasized.

Clinical and laboratory research projects are in progress, with financial support from federal agencies and other sources. Sig-
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Programs in preventive and community dentistry have been designed to provide dental students with experiences to increase their awareness of urgent health needs and to encourage students to develop and implement approaches to alleviate these needs. Extramural programs provide students with opportunities to interact with diverse patient care teams and communities in low-income areas. Using the community as the classroom, students are able to observe and participate in a variety of activities intended to make the student aware of the societal obligations he or she must assume in order to practice effectively.

A recent addition to the Department's resources is a five-unit mobile dental van which will be operated throughout Iowa and provide senior dental students an experience which will closely simulate a community dental practice.

Graduate Program

A proposal for a Master of Science program in Preventive and Community Dentistry has recently been submitted to the Graduate College and to the Board of Regents. This new program utilizes a broad interdisciplinary approach.

The program will be individualized to meet the needs of graduate students planning careers teaching preventive and community dentistry in dental colleges, administrative dental health programs and researching in the field of preventive and community dentistry.
Removable Prosthodontics

Staff: professor Thayer; associate professor Miller; assistant professors DeCouniter, Santner; instructor Stoner
Affiliated staff: LaVelle, Osborn, Thompson, Tong

Courses
84205 Rationale in Removable Prosthodontic Technique Lecture 2 a.h.
Lab procedures in construction of complete and removable partial dentures
84206 Removable Prosthodontic Technique Laboratory 4 a.h.
Laboratory exercises in construction of complete and removable partial dentures
84110 Removable Prosthodontics 5 a.h.
Sensor and clinical examination, diagnosis, prognosis and functions in design and construction of complete and removable partial dentures

Primarily for Graduates
84206 Literature Review Removable Prosthodontics cr. arr.
84207 Technique Methods Removable Prosthodontics cr. arr.
84208 Advanced Clinical Prosthodontics cr. arr.
84209 Research under supervision of selected Removable Prosthodontics cr. arr.
Research design and collection of data on selected research project
84210 Seminar Removable Prosthodontics cr. arr.
84211 Conference and discussion of assigned papers cr. arr.
84212 Practice Teaching Removable Prosthodontics cr. arr.
Clinical and classroom teaching experience assigned by adviser
84213 Thesis Preparation Removable Prosthodontics cr. arr.
Proposed in accordance with regulations of Graduate College

*May be taken during any semester with permission of Department head
College of Education

Administrative Staff
Dean: Howard R. June
Dean Emeritus: Omer T. Peterson
Associate Dean Emeritus: A. Von Dye
Assistant Dean Emeritus: Henry H. DeKoven
Assistant Dean: Stuart C. Gray, Ray A. Kitson, Owen L. Springer
Principal, University Hospital School: Paul D. MacKay
Director, Iowa Testing Program: William E. DeKoven
Director, Iowa Center for Research in Education and Education Information Center: Pearl B. Stone
Coordinator, Educational Media: Connel B. Henderson
Educational Psychology Librarian: Anne G. Evans
Curricular Library Librarian: Grace M. Sulpulo

Division Chairmen
Division of Social Foundations, Adult Education, Higher Education and Educational Media: Eugene Anderson
Division of Educational Administration: William H. Lane
Division of Elementary Education: Jerry N. Kuhn
Division of Educational Psychology, Measurement and Statistics: Paul J. Strother
Division of Secondary Education: John R. McAdams
Division of Counselor Education: Albert B. najd
Division of Special Education: Archie McIlvaine

The first permanent college-level department of education in the United States was established at The University of Iowa in 1872. The department became the School of Education in 1907; and the College of Education, structured in the basic pattern which governs today, was founded in 1913. The growth of the College has corresponded to the growth of the University.

The College has seven divisions: Social Foundations, Adult and Higher Education, and Educational Media; Educational Administration; Elementary Education; Educational Psychology; Measurement and Statistics; Secondary Education; Counselor Education; and Special Education.

The University is accredited by the National Council for Accreditation of Teacher Education (NCATE) for the preparation of elementary and secondary teachers and other professional school personnel, with the doctorate the highest degree approved.

Faculty
Members of the College of Education faculty are productive in research and writing and are well qualified by preparation and experience. Ninety-seven percent of the members of the faculty with academic rank hold earned doctorates in their teaching fields, and 93 percent have had teaching or administrative experience in the public schools.

A major strength of the College is its close working relationship with the College of Liberal Arts. With few exceptions, professors on the College of Education faculty also hold academic rank in the College of Liberal Arts. A majority of the professors who teach secondary school methods have doctorates in their teaching disciplines, as well as preparation in education, and hold academic rank both in their academic departments and in Education.

The faculty has a strong commitment to teaching and to the application of new methods and media in their own classes. Most members employ modern audiovisual media; and field practicum experiences are emphasized in such areas as teacher education, counseling, special education, curriculum and administration.

In addition to independent research by individual faculty members, several studies are being pursued with the support of foundation and federal grants awarded to divisions and individual staff members. Most members of the faculty are active in professional societies, and several recently have held or now hold key offices in such organizations at the national level.

Facilities
The University Hospital School
This facility contains two unique sections within the same complex, the Children’s Rehabilitation section and the Pine School section. In cooperation with the University Hospital School, the College of Educational studies and develops curricular procedures and materials for both sections of the Hospital School.

Children’s Rehabilitation
This section has three main functions: the education, care and treatment of children who can be educated but who are so severely involved physically that they cannot attend or progress optimally in the regular schools; specialized training for workers and teachers in all areas concerned with handicapped children; and clinical research pertaining to causes and prevention of handicapping conditions in children and to management of handicapped children.

Pine School
This section provides special help on a day school basis for selected preschool and elementary school children in the Iowa City area who are mentally retarded. Educational research, teacher education and broad services are the main functions of this section. Opportunities for student teaching and supervised clinical practice is available.

Basic and clinical research is ongoing in the Children’s Research unit of the University Hospital School. This research pertains to mental retardation and related conditions. Such projects are carried on mainly by the Department of Pediatrics in the College of Medicine.

School Program for Emotionally-Disturbed Children
This program is located in the child psychiatry unit of the University’s Psychiatric Hospital. Children attending this school are residential patients in the child psychiatry unit. The program
is supported by the Psychopathic Hospital and directed by the College of Education. Opportunities are available for student teaching and practicum in school psychological services.

Reading Clinic
The Reading Clinic makes possible investigation into the fundamental causes of reading deficiencies and experimentation with methods of overcoming these deficiencies. It provides opportunity for observation and practice in the diagnosis and teaching of severely-retarded readers.

Curriculum Laboratory
The Laboratory provides materials for student teachers and students of curriculum problems. It brings into a convenient central location approximately 15,000 elementary and secondary school textbooks, reference books, courses of study, bibliographies, special pamphlets, teaching aids such as tapes and games, other materials needed in curriculum development, and it administers the University Youth Collection of approximately 10,000 volumes.

Educational Media Instructional Area
A variety of instructional equipment and materials are contained in this area. Laboratory facilities provide opportunities in developing skills in the design and production of instructional materials and in the operation of instructional equipment of all types.

Statistical Laboratory
The Laboratory contains a variety of calculating equipment. It provides experience in the application of such equipment to the analysis of statistical data, and it provides facilities for the analysis of research.

Iowa Center for Research in School Administration
In combination with the Iowa Educational Information Center this research activity conducts studies of trends in Iowa schools, publishes special research reports, conducts some local school surveys, develops management information systems services, and provides consultation and services in the field of computer applications in education.

Education-Psychology Library
With approximately 91,000 volumes, the Library is located on the west second floor of East Hall. It offers periodicals, films, ERIC microfiche, books, reference books, a reserve room and seating space for students of education, psychology and child behavior.

University Counseling Services
The facilities of the University Counseling Services are available to students in counseling psychology for research and practicum purposes.

The Iowa Testing Program
The Iowa Testing staff develops standardized educational tests, such as the widely-used Iowa Tests of Basic Skills and Iowa Tests of Educational Development, for use in elementary and secondary schools. This division also conducts research studies in educational measurement and evaluation, publishes brochures, sponsors lectures and symposia and provides consultative services to school systems.

Certification and Degree Programs

General Information
The College of Education offers teacher-education programs in elementary, secondary and special education. These programs have a number of common characteristics.

General Liberal Arts Requirements
The bachelor's degree requires 124 semester hours of credit, whatever program the student elects to pursue, and this total must include the general College of Liberal Arts requirements in rhetoric and physical skills, mathematics, and the literature, social science, natural science and historical-cultural core areas.

State Requirement
Certification to teach in Iowa requires completion of two semester hours in American history or American government.

The Professional Semester
The final phase of the teacher-education programs in all three areas is the professional semester—a full semester devoted to supervised student teaching and observation in a variety of situations. Periodic seminars provide for discussion and evaluation of student teachers' progress. Student teachers usually live in the communities in which they have their student-teaching assignments.

Certification
Though each state has its own teacher-certification requirements, a majority of state certification agencies have entered into an agreement to issue certificates to applicants who have completed approved teacher-education programs in institutions accredited by the National Council for Accreditation of Teacher Education. The University of Iowa teacher-education programs have been approved by the Council.

Admission Requirements
To be admitted to a teacher-education program the student must:
  • Be admitted to the University as a degree candidate;
  • Complete the American College Test; and
  • Be free of any health impairment or physical handicap which precludes success in teaching.
Application Deadline
With some exceptions, applications for admission to a teacher-education program must be submitted by May 15 prior to the academic year in which the applicant wishes to enter the program. Generally the student will enter the program in the junior year.

Elementary Education
Elementary teachers guide children in experiences with music, artwork, stories and plays, and introduce them to science, maths, language and social studies. Elementary teachers usually work with one group of children and teach several different subjects. However, teachers in the upper grades may teach only one or two subjects to several different groups.

Among the most important qualifications for elementary school teaching, in addition to an enjoyment and understanding of children, are patience, self-discipline and high standards of personal conduct.

Preparation for elementary teaching involves study of the selection and structure of curricular materials suitable for school-age children, and of the methodological procedures most appropriate for presenting these materials. Study in the program is rigorous. It involves wide reading, creative planning and application of knowledge in the classroom.

Currently, the demand for teachers has been sharply reduced. As a result, competition for positions is very great, and young people seeking their first positions may find schools placing great emphasis on their academic work and the quality of their training. However, outstanding graduates are finding jobs, and many of these positions are quite good.

The elementary-education program is designed specifically to prepare students to teach kindergarten through sixth grade. A special sequence is also available for selected students seeking the nursery school-kindergarten endorsement in addition to elementary certification.

Students interested in teaching in such areas as art, music or physical education at the elementary level should consult their advisers regarding special certification requirements.

Students interested in dual certification for elementary and special education should note the requirements for admission to each of these programs. Students interested in this combination must make a separate application to each program and these applications will be considered independently.

Professional Requirements
Elementary-teacher certification at The University of Iowa requires successful completion of a preparatory program approved by the Iowa Department of Public Instruction and the National Council for the Accreditation of Teacher Education. These certification patterns are available—the Bachelor of Arts, Bachelor of Science and Bachelor of General Studies.

In the B.A. and B.S. programs the professional courses constitute a major, in the B.G.S. program they do not. The professional requirements are the same in all three programs; the differences are in the general College of Liberal Arts requirements.

The student must have been admitted to the preteacher-education program to be eligible to enroll in the foundation courses, which should be completed before the junior year.

College of Education

Required Foundation Courses
7E:00 Introduction: Elementary Teaching 2 s.h.
7E:91 Pre-Education Practicum 2 s.h.
(Must be taken concurrently with 7E:100; students with prior equivalent experience may file application for exemption from 7E:91)
7P:75 Educational Psychology 3 s.h.
7V:101 Operation of Audiovisual 1 s.h.

The Junior-Senior Sequence
Students must have been admitted to the teacher-education program to be eligible to enroll in this sequence, which must be completed during the two semesters and/or summer session preceding student teaching.

7E:160 Methods: Elementary-School Language Arts 2 s.h.
7E:161 Methods: Elementary-School Social Studies 2 s.h.
7E:162 Methods: Elementary-School Science 2 s.h.
7E:163 Methods: Elementary-School Mathematics 2 s.h.
7E:164 Methods: Elementary-School Reading 2 s.h.

Student Teaching Experience (Senior Year)
Fifteen semester hours of credit are given for successful completion of the semester of student teaching (7E:191 or 192 Observation and Laboratory Practice).

Areas of Specialization
The student selects an area of specialization from an approved list. It takes approximately 24 semester hours of credit approved by the student's adviser to meet this requirement. Most of this coursework is completed in the College of Liberal Arts.

Areas of specialization for elementary-education majors are:
- elementary music, elementary physical education, elementary art, elementary reading, early childhood education, elementary language arts, elementary science, elementary social science, elementary mathematics, elementary generalist and special education.

Admission to Preteacher Education
All entering freshmen who indicate on the University admission application form that they wish to pursue an elementary-education program will be admitted to the preteacher-education program if they meet minimum requirements (see "General Information").

University of Iowa students not admitted to the program as freshmen, and transfer students not admitted to the program at the time of their initial application to the University, must submit formal applications for admission to the program. In addition to minimum requirements for entering freshmen, they must have completed at least 28 semester hours of college coursework, with at least a 2.2 grade-point average (A = 4) for all college coursework attempted.

Admission applications for the preteacher-education program may be submitted by May 15 or December 15 of the semester in which the applicant achieved the 18-hour minimum. Students who are accepted into the preteacher-education program and have attained sophomore standing are eligible to enroll in the foundation level of the elementary education program.
Admission to Teacher Education (Junior-Senior Sequence)

Students who have completed the foundation portion of the elementary-education program, have completed at least the sophomore year and wish to continue into the junior-senior sequence must apply for admission to the sequence. This application, the final step in gaining formal admission to the elementary-teacher education program, must be on file by May 15 preceding the academic year in which the applicant wishes to enroll in the junior-senior sequence.

Minimum requirements for admission are:
- Successful completion of at least 35 semester hours of college coursework;
- Successful completion of all foundation courses;
- At least a 2.2 cumulative grade-point average for all college coursework attempted; and
- Recommendation by a review committee, based on the applicant’s total record, a personal interview and the applicant’s record in the pre-education program (7E:91).

Late transfer students at the junior level or above will be considered for admission if they have satisfied the foundation course requirements and have applied for admission to the junior-senior sequence by December 15 of the junior year.

Graduate students are subject to the same application deadlines, selection procedures and admission and course requirements as undergraduates, except that their grade-point averages must meet the requirements for admission to and continuing in the Graduate College.

A student who does not complete the student teaching portion of his or her program with the class to which he or she is admitted must reapply for admission to a new teacher-education program class.

Number of Admissions

Due to limitations in the number of sections for student teachers in cooperating schools, and to limitations in the number of faculty members, it may be necessary to limit the number of students admitted to the junior-senior sequence in elementary education. In that case, the best-qualified applicants will be admitted.

Secondary Education

Secondary school teaching requires an understanding and appreciation of adolescent children, a sound background in the liberal arts, an open attitude toward contemporary society and its problems, and an enthusiasm for the subject taught.

Junior and senior high-school teachers usually specialize in a particular subject. They teach several classes each day, either in their main subject, in related subjects or in both. The most frequent combinations are English and history or other social sciences; mathematics and general science; and chemistry and biology or general science. Teachers of home economics, agriculture, driver education, music, art, industrial arts and business-oriented subjects less frequently conduct classes in other subjects.

Although classroom instruction is a large portion of their work, secondary teachers additionally plan and develop teaching materials, originate and correct tests, keep records and make out reports, consult with parents, supervise study halls and perform other administrative duties. The growing use of teaching machines, programmed instruction and teacher aide helps to eliminate many routine tasks.

Many teachers are also involved in supervision of student activities, including clubs and social functions, and become involved in nonacademic affairs as interested members of the community where they teach. Maintaining good relations with parents and the local community is an important aspect of the teaching profession.

At least one year of professional education beyond the bachelor’s degree and several years of successful classroom teaching are required for most supervisory and administrative positions in secondary education.

Some experienced teachers are assigned as part- or full-time guidance counselors, or as teachers of handicapped or other special groups of children. Usually additional preparation and special certifications are required for these assignments.

Program Requirements

The student must complete a sufficient number of courses (30–54 semester hours) to satisfy the requirements for a teaching major in a department of the College of Liberal Arts or the College of Business Administration. In most cases the completion of an academic major will satisfy this requirement.

It is strongly recommended that students earn sufficient credits (18–24) in a field outside the major to qualify to teach in the second field.

The student must complete this foundation program of professional courses during the sophomore and junior years:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
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<tbody>
<tr>
<td>7E:91</td>
<td>Pre-Education Practicum</td>
</tr>
<tr>
<td>7E:100</td>
<td>Introduction to Secondary-School Teaching</td>
</tr>
</tbody>
</table>

(Students with prior equivalent experience may substitute 7E:91 for 7E:100, subject to approval by the director of student teaching.)

Juniors who plan to major in secondary education major in the fall semester of the senior year must take methods courses during either the preceding academic year or the summer session. Majors in art, music and physical education must earn credit in elementary and secondary special methods and in elementary and secondary student teaching.

Professional Semester

Senior students may enroll for the professional semester (7S:191 Observation and Laboratory Practice) in either the fall or spring semester. In some major fields, students will be expected to enroll in both 7S:191 and 7S:192. The basic amount of credit for Observation and Laboratory Practice will be 12 semester hours.

To register for Observation and Laboratory Practice, the student must have:
- Been formally admitted to the Program in Secondary-Teacher Education;
- Attained junior standing;
- Satisfactorily completed courses 7F:75, 7S:91 and 7F:100 or their equivalents;
• Maintained a cumulative grade-point average of not less than 2.2 if an undergraduate student or 3.5 if a graduate student (2.7 if an M.A.T. candidate), on all college work attempted, all college work attempted at The University of Iowa and all work attempted in the teaching major;

• Filed application for an assignment by May 15 preceding the academic year during which student teaching is desired; and

• Consulted with and been recommended by the appropriate special methods instructor and the Coordinator of Student Teaching.

Students who want or need more than 12 semester hours in the Professional Semester may elect one of these options:

76:190 Individual Field Projects in Laboratory Practice 1–3 s.h.

75:187 Seminar in Student Teaching 2 s.h.

Curriculum and Instructional Problems (special sections in English, Social Studies, Mathematics, etc.) 2 s.h.

7V:110 Selection and Use of Educational Media Elective education or content courses in a major or minor teaching field, if offered on Saturdays or late afternoons when student teachers can attend 2–3 s.h.

The CUTE Program

Concerned students who feel they may better further their education through student teaching in an inner-city situation, and who are interested in working with disadvantaged people, may apply through the Center for Urban Teacher Education (CUTE) program.

This program is a federal project and one of the many Midwest Continental Regional Education Laboratories. Iowa is one of 40 institutions which place selected students in the Kansas City inner-city system.

This program is open to any student who meets the general requirements in the College of Education.

Admission

A freshman interested in teaching in secondary education may declare this interest at the time he or she applies for admission to the University, but is not eligible to elect professional courses in education until attaining sophomore standing.

To be admitted to the program in secondary-teacher education, the student must meet the basic requirements (see "General Information") and must have attained sophomore standing (at least 28 semester hours of credit) with at least a 2.2 cumulative grade-point average on all college coursework attempted.

Transfer students must satisfactorily complete at least one semester or summer session in residence at Iowa, earning at least eight semester hours of credit.

A graduate student seeking admission to the program in secondary-teacher education must meet the requirements for admission to the Graduate College, have at least a 3.5 cumulative grade-point average (2.7 for the M.A.T. student) and have completed at least one semester or summer session at Iowa, in which he or she earned at least eight semester hours of credit.

Tentative admission may be granted to transfer students with advanced standing (56 semester hours) and to graduate students, prior to fulfillment of the residence requirement; but final admission and the student's teaching assignment must await satisfaction of the residence requirement.

Special Education

The Department of Special Education expects its graduates to continue to find opportunities as teachers of special classes in the public schools or as consultants and resource persons for teachers working with handicapped children in regular classrooms. Opportunities in the latter area reflect the trend in special education toward the accommodation of handicapped children in regular classrooms with supplemental help, rather than the segregation of handicapped children in special classes.

The student who wishes to maximize career opportunities in special education should plan to pursue advanced degree work. The Iowa program in special education aims to give the student a knowledge of the characteristics of exceptional children, educational programs currently provided for exceptional children and methods of teaching exceptional children.

Upon completion of the Bachelor of Arts, Bachelor of Science or Bachelor of General Studies programs, the student may be certified to teach either mentally-retarded or physically-handicapped children at the elementary and/or secondary levels.

A student majoring in special education has two options: to qualify for certification in special education only, and not as an elementary- or secondary-school teacher in other than a special education program, or to qualify for regular certification in elementary or secondary education as well as certification in special education.

The Division of Special Education recommends the dual program because it enhances the student's employment opportunities and provides a more comprehensive training for teaching. However, completion of the dual major may require attending summer sessions if the student wants to graduate in four years.

The special education major requires a minimum concentration of 20 semester hours of coursework in the student's chosen area of teaching—either the mentally retarded or the physically handicapped. The program also requires one semester of student teaching, usually taken during the senior year.

The program is enriched by team teaching, guest lectures, audiovisual aids, field trips, the use of observation techniques and laboratory experiences.

Certification in Elementary Education and Elementary Special Education with Emphasis in Mental Retardation

Coursework required by Special Education:

7U:30–31 Introduction to and Observation of Exceptional Children I–II

7U:32–33 Instructional Methods and Procedures in Special Education I–II

7U:135 Mental Retardation

7U:192 Laboratory Practice in the Education of the Mentally Retarded Child (eight weeks at the elementary level)

Coursework required by Elementary Education:

7E:91 Exploratory Experience in Teaching (or equivalent)
Certification in General Education and Elementary Education with Emphasis in the Physically Handicapped

Coursework required by Special Education:
7E:100 Introduction to Elementary Teaching
7E:75 Educational Psychology and Measurement
7V:101 Operation of Audiovisual Equipment plus any five of the following:
7E:150 Methods: Elementary-School Language Arts
7E:161 Methods: Elementary-School Social Studies
7E:162 Methods: Elementary-School Science
7E:163 Methods: Elementary-School Mathematics
7E:164 Methods: Elementary-School Reading
7E:165* Methods: Early-Childhood Education I

Special education majors satisfy the area of specialization requirement for elementary education by completing the special education coursework.

Certification in Elementary Education and Elementary Education with Emphasis in the Physically Handicapped

Coursework required by Special Education:
7U:30-31 Introduction to and Observation of Exceptional Children I-II
7U:32-33 Instructional Methods and Procedures in Special Education I-II
7U:139 Orientation to Rehabilitation of the Physically Handicapped Child
7J:15 Introduction to Speech and Hearing Processes and Disorders
7U:191 Laboratory Practice in Education of the Physically Handicapped Child (eight weeks)

Coursework required by Elementary Education:
Same as for emphasis in Mental Retardation

Certification in Elementary Education Only, with Emphasis in Mental Retardation

Coursework required by Special Education:
7U:30-31 Introduction to and Observation of Exceptional Children I-II
7U:32-33 Instructional Methods and Procedures in Special Education I-II
7U:135 Mental Retardation
7U:192 Laboratory Practice in the Education of the Mentally Retarded Child (one semester)
7E:160 Methods: Elementary-School Language Arts
7E:161 Methods: Elementary-School Social Studies
7E:162 Methods: Elementary-School Science
7E:163 Methods: Elementary-School Mathematics
7E:164 Methods: Elementary-School Reading
7P:75 Educational Psychology and Measurement
7P:100 Socialization of the School-Age Child
7V:101 Operation of Audiovisual Equipment
7V:110 Selection and Utilization of Educational Media
345:1 Introduction to Sociology: Principles
345:142 Juvenile Delinquency

Admission

Because of limited facilities, the Division of Special Education limits enrollment in its undergraduate program. If the number of applicants exceeds its enrollment limit, the best qualified applicants will be admitted.

A student who wishes to be admitted to the special-education program must make formal application.

Students applying before or during the first semester of the freshman year must meet the general requirements for admission to a teacher-education program.

Students who apply after completing one semester or more of college-level study must meet the general requirements, and must have at least a 2.2 grade-point average on all coursework attempted and on all coursework attempted at the University.

Students planning to complete additional majors in elementary or secondary education must be admitted to and meet the requirements of these programs.

Advanced Study

General Information

Graduate study in the College of Education is guided by the general regulations of the Graduate College, with certain additional requirements imposed by the faculty of the College of Education. Graduate students in education register in the Graduate College and receive their degrees from that college.

The College of Education offers graduate programs leading to the Master of Arts (M.A.T), Master of Arts in Teaching (M.A.T.), Educational Specialist (Ed.S.) and Doctor of Philoso-
Master of Arts in Teaching

The M.A.T. program is a 38-semester-hour (minimum) nonthesis course of study designed for superior liberal arts graduates who have few or no professional-education courses on their undergraduate programs. The program leads to a master's degree and certification as a secondary teacher in such fields as art, business, English, foreign languages, mathematics, music, science and social studies. A grade-point average of 2.7 is required for admission.

Educational Specialist

This degree is granted upon the completion of a prescribed two-year, postbaccalaureate program designed for students preparing themselves professionally in such fields as teaching, administration, and supervision and special services.

Doctor of Philosophy

The Ph.D. degree is the highest earned academic degree awarded by the College and is conferred upon students who have demonstrated superior scholarship and mastery of research skills in coursework as well as in the preparation and defense of a dissertation.

Adult Education

Master's Program (with or without thesis)

Purpose: To provide basic understanding of adult learning theory, instructional methodology and adult group processes in preparation for careers as professional adult educators or in areas that involve working with adults in such areas as schools, prisons, extension, public health and community development programs.

Doctoral Program

Purpose: To prepare for teaching, research and advanced leadership positions in the field of adult education; emphasis given to a broad background with interdisciplinary relationships.

Educational Administration

Master's Program (with or without thesis)

Purpose: To prepare individuals for appointments as elementary- or secondary-school principals, or for certain positions with state departments of education or the U.S. Office of Education.

Educational Specialist Program

Purpose: To prepare students for appointments as superintendents of schools or in state departments of education or the U.S. Office of Education, to assist school principals in upgrading their administrative skills.

Doctoral Program

Purpose: To prepare students for positions at all levels of administration in the public schools or to teach educational administration at the college level.

Educational Media

Master's Program (with or without thesis)

Purpose: To prepare coordinators, producers or consultants for educational media, to provide those who have met the state requirements for a professional teaching certificate with the competence necessary to qualify them for state certification as educational-media specialists; thesis recommended for students who are planning doctoral study or who wish to do a thorough investigation of an approved topic.

Educational Specialist Program

Purpose: To provide specialized training for coordinators, consultants or producers of educational media at a level beyond that attained in the M.A. program.

Doctoral Program

Purpose: To prepare teachers, researchers, instructional designers and program directors for positions in educational media.

Educational Psychology

Master's Program (with or without thesis)

Purpose: To provide the student with an introductory overview of educational psychology at the graduate level; thesis intended for students who plan to continue graduate study in educational psychology beyond the M.A.

Doctoral Program

Purpose: To prepare students to teach and to conduct research in educational psychology; emphasis placed on developing the individual student's particular area of interest.

Educational Measurement and Statistics

Master's Program (with or without thesis)

Purpose: To provide minimal training for the student seeking to qualify for a position in a school system, state department of
public instruction, test publishing organization or research cen-
ter which calls for some special competence in educational mea-
surement and research methodology; also appropriate for the
student seeking to broaden knowledge of measurement and re-
search methodology as much for the sake of personal develop-
ment as for professional improvement; intended primarily for the
student planning to continue advanced work in measurement
theory and statistical methods at the Ph.D. level

Doctoral Program
Purpose: To prepare students for high-level professional posi-
tions in the fields of educational measurement and statistical
methods in colleges, universities, state departments of public
institutions, least publishing firms or re-
search centers.

Reading Disability
Master's Program (without thesis)
Purpose: To prepare resource teachers in the area of reading
disability at elementary, junior-high and secondary levels; em-
phasis on supervised clinical practice in the diagnosis and in-
struction of children with reading disability whose intellectual
functioning is within the normal range.

Elementary Education
Master's Program (with or without thesis)
Purpose: To prepare students in such areas of specialization as
children's literature, early childhood education, language arts,
mathematics, reading, science and social studies; completion of
this program pattern, together with four years successful teach-
ing experience, qualifies the student for the permanent profes-
sional certificate with endorsement; as an elementary-school
supervisor; most appropriate for those who intend to continue
in classroom teaching or who are interested in a supervisory or
curriculum development position.

Master's Program in Developmental Reading
Purpose: To prepare students for positions as reading specialists
in kindergartens and grades 1–14; also valuable for students who
want to specialize further in the area and eventually to teach in
a college or university; qualifies the student for the reading-
specialist certificate endorsement and, after four years of success-
ful teaching experience, for the permanent professional
certificate and endorsement as an elementary-school supervisor.

Master's Program in Elementary School Administration
Purpose: To prepare students for positions as elementary-school
principals; planned both as a "criminal one and as the first year
in a two-year sequence leading to the educational specialist de-
gree, together with four years successful teaching experience, qualifies the student for the permanent professional certificate with elementary-school supervision and elementary-
school administration endorsements.

Educational Specialist Degree
Purpose: To equip potential educational leaders with the knowl-
edge and skill necessary for positions in which the administrator
assumes responsibility for a number of elementary-school at-
tendance units; it is also anticipated that many elementary-
school principals may wish to increase their competence by
completing this program.

Doctoral Program
Purpose: To prepare students for college teaching and adminis-
trative positions, or for research, curriculum, supervisory or
administrative positions in large consolidated and urban school
systems.

School Guidance and Counseling
Master's Program (with or without thesis)
Purpose: To provide graduate-level instruction necessary for
school counseling positions.

Educational Specialist Program
Purpose: To provide advanced specialization in counseling and
guidance for M.A. graduates who seek to increase professional
competence in supervision and administration at the school and/or state levels.

Doctoral Program
Purpose: To prepare individuals for leadership and research posi-
tions in counseling and guidance, most often as counselor educa-
tors in colleges or universities, or as directors of guidance
programs in large city school systems or at the state and national
levels.

Rehabilitation Counseling
Master's Program (with or without thesis)
Purpose: To develop basic competency for counseling-type in-
teraction with the vocational problems of the physically, men-
tally and culturally handicapped; graduates are equipped to
perform as rehabilitation counselors with public agencies,
rehabilitation centers, hospitals and sheltered workshops; stu-
dents intending doctoral study or wanting to emphasize research
skills should follow the thesis program.

Doctoral Program
Purpose: To prepare individuals for research, counseling and
educating positions, as counselor educators in universities and as
directors of vocational services in hospitals, rehabilitation cen-
ters and other settings.

College Student Personnel
Master's Program (with or without thesis)
Purpose: To prepare candidates for such positions as admissions
officers, activities directors, financial aid advisors, union direc-
tors, residence directors and foreign student advisors; and with
experience, as student deans, college counselors and teachers, and director of admissions or placement

**Ed.S. Program**

**Purpose:** To provide specialized professional training in college student-personnel administration beyond the master's level for persons not planning to enter doctoral study; to prepare students for such positions as dean of men or women, dean of students in a small college or director of admissions or director of student activities at any level.

**Doctoral Program**

**Purpose:** To provide training in depth through an academic, research-oriented curriculum which draws heavily upon the field of counseling psychology; prepares individuals to serve competently in such positions as dean of men or women, dean of students, college counselor or teacher, director of admissions, placement director or counselor educator; generally planned as a four-year program in which the M.A. is conferred sometime during the second year; students entering with an M.A. take three years, including dissertation.

**Counseling Psychology**

**Doctoral Program**

**Purpose:** To prepare doctoral-level counseling psychologists for positions primarily in higher education, usually with academic appointments in counselor education or psychology and service assignments in counseling and vocational psychology; and to conduct their own research and direct that of their students, supervise counselor trainees and consult with other student service personnel.

**Higher Education**

**Master's Program (without thesis)**

**Purpose:** To prepare students for entry-level staff and administrative positions, such as assistant dean of instruction, in two- and four-year colleges.

**Educational Specialist Program**

**Purpose:** To provide the advanced graduate education needed by instructors at the undergraduate level in two- and four-year colleges and by administrators in higher education not planning to continue for the doctorate; the Specialist degree may be awarded upon completion of a joint program in higher education and an academic discipline comprising a minimum of 60 semester hours of graduate work and the completion of a higher education sequence following a master's degree program.

**Doctoral Program**

**Purpose:** To prepare professional personnel for teaching, research and administration in higher education.

**Secondary School Administration**

**Master's Program (with or without thesis)**

The master's degree in secondary-school administration is offered in the Division of Educational Administration.

**Doctoral Program**

**Purpose:** To prepare students for positions as secondary school principals, directors of secondary education and college teaching in secondary education.

**Secondary School Curriculum**

**Master's Program (with or without thesis)**

**Purpose:** To prepare teachers and administrators for positions as counselors, directors and coordinators in the field of secondary-school curriculum development.

**Doctoral Program**

**Purpose:** To prepare students for leadership positions in the field of curriculum for public schools, state departments and college teaching.

**Art Education**

**Master's Program**

**Purpose:** To prepare highly-qualified teachers of art for public schools, junior colleges and small liberal arts colleges; the strong academic emphasis assists teachers who are themselves creative artists to become highly literate in the history and language of art; administered by the School of Art and Art History with the cooperation of the College of Education.

**Doctoral Program**

**Purpose:** To prepare college teachers and researchers in art education and supervisors of art in state departments of education and school systems; to provide an opportunity for continuing inquiry and creative work in art history and in studio administration by the College of Education with the cooperation of the School of Art and Art History.

**Business Education**

**Master's Program (without thesis)**

**Purpose:** Designed for the graduate student who holds a teacher's certificate and has either a major or a minor teaching area in business education; coursework from three areas is included in the program with an approved freedom of choice within each area.

- *Business administration content, to provide improvement in specific business content areas*
- *Professional business education, to emphasize improvement of teaching techniques and philosophy of business education*
- *Professional general education, to emphasize general aspects of teaching*

**Doctoral Program**

The Business Education Program leading to the Ph.D. is offered on a joint basis by the colleges of Education and Business Administration; the candidate may place emphasis in both colleges, although primary emphasis normally will be given to the various programs in business, with particular attention to business education.
English Education
Master's Program
Purpose: To prepare teachers and supervisors of English for secondary schools and junior colleges

Doctoral Program
Purpose: To prepare supervisors, teacher-training personnel, college teachers and researchers in English education

Mathematics Education
Master's Program (with or without thesis)
Purpose: To provide students not intending doctoral study with advanced specialization in mathematics as a better foundation for teaching at the secondary level

Doctoral Program
Purpose: To prepare qualified persons for careers in mathematics education at the university level or as supervisors of secondary- and elementary-school mathematics in large educational enterprises

Music Education
The music education programs are administered by the School of Music in cooperation with the College of Education.

Master's Program
Purpose: To provide students with deeper insights into music, the theory and practice of music education and the role of music in the school curriculum

Doctoral Program
Purpose: To prepare students for teaching, research or administrative functions in (a) college positions—teachers of music education classes and activities; band, chorus and orchestra directors; administrators of music departments and schools of music; and in (b) public-school positions—music supervisors, research and curriculum consultants, and directors of city- or district-school music programs

Physical Education for Men
This program is administered by the Department of Physical Education for Men.

Master's Program (with or without thesis)
Purpose: To prepare students for teaching, supervision or teaching of physical education in schools; thesis program designed primarily as the first step in graduate study leading to the Ph.D. degree; particular emphasis is placed upon techniques of research

Educational Specialist
Purpose: To prepare graduate students for teaching physical education in community colleges

Doctoral Program
Purpose: To prepare graduates to teach graduate courses in their area of specialization and to conduct and direct research in that area

Physical Education for Women
This program is administered by the Department of Physical Education for Women.

Master's Program (with thesis)
Purpose: To prepare women for leadership in physical education as teachers, administrators or supervisors

Doctoral Program
Purpose: To prepare women for teaching, administration or research in physical education

Science Education
Master of Arts Program in Science Teaching
See section on M.A.T. Program

Master of Science Program (without thesis)
Purpose: Designed for students who plan to continue in teaching

Master of Science Program (with thesis)
Purpose: Designed for candidates who plan to continue study toward the Specialist or Ph.D. degree

Educational Specialist
Purpose: Recommended for supervisors (state, regional or local), as well as for instructors in community colleges and/or small four-year liberal arts colleges

Doctor of Philosophy
Purpose: Available for qualified candidates who aspire to college and university positions as science educators; major supervisory posts in national, state and local systems; instructors of general education science courses and areas of major colleges; or positions as research directors in science education

Social Studies Education
Master's Program
Purpose: To prepare secondary departmental chairman, supervisors, curriculum directors, teacher-education personnel and college instructors in the social sciences and pedagogy

Doctoral Program
Purpose: To provide an opportunity for interdisciplinary work in history and the social sciences for classroom teachers, high- school department chairmen and supervisors, as well as others interested in acquiring greater competency in the social sciences and greater proficiency in teaching and supervision
Social Foundations and Philosophy

Master's Program
Purpose: Although a master's degree in social foundations or philosophy of education is inadequate by itself, the program is designed for students who intend to pursue the Ph.D. in the area of social foundations of education and who enter the program without a master's degree and want one

Doctoral Program
Purpose: To prepare college-level instructors in the fields of history and philosophy of education, comparative education, and educational sociology

Special Education and School Psychology
Master's Program (without thesis)
Purpose: To prepare teachers, supervisors, and consultants in special education at elementary- and secondary-school levels; within the field of special education, the student may emphasize preparation to work with the following kinds of exceptional children: mentally retarded, emotionally maladjusted, physically handicapped, hearing impaired, and visually impaired; specific master's degree programs are offered in mental retardation and in behavior disorders; program in mental retardation is geared to two groups: major group comprises individuals who have a background in mental retardation and some experience; other group represents persons who are entering the training program at the M.A. level with no previous experience in the field; latter group is required to complete selected courses from the undergraduate sequences as prerequisites to their M.A. program; behavior disorders program emphasizes preparation to work with children who have primarily affective, but may also have cognitive and psychomotor dysfunction

Educational Specialist
Purpose: To provide sufficient training and experience to enable graduates to be competent directors of local, regional, and state special education programs; successful completion qualifies the graduate for certification in Iowa to serve a director of special education; provides for specialization in administration of special-education programs, mental retardation and behavior disorders; Ed.S. granted upon completion of a prescribed two-year, postbaccalaureate program; designed primarily for practitioners who want additional professional preparation beyond the M.A. degree but do not choose to develop the more specialized research skills required for the Ph.D. degree

Doctoral Program in Mental Retardation
Purpose: To prepare students for positions in teaching, research and consultative work

Doctoral Program in Administration of Special Education
Purpose: To provide sufficient training and experience to enable graduates to be competent directors of local, regional and state special-education programs; usual practice is for the student to take coursework and practicum in a second area of specialization to provide additional depth of training and experience; in addition, he or she takes advanced coursework and seminars in the various areas of individual need to develop competence in administration of special education; he or she takes coursework in theory and practice in the Division of Educational Administration, and a series of courses, short-term practice, observation and internship experiences in special-education administration; internships include an internship in regular programs of special education, state departments and metropolitan special-education programs

Master's Program in School Psychology (without thesis)
Purpose: To provide basic graduate-level preparation for school psychologists; the first phase of preparation in the training programs for school psychologists at The University of Iowa; the second phase, consisting of a second year of full-time study, leads to the Ed.S. degree; students must complete the full two-year sequence to qualify for the University's recommendation for certification as a school psychologist

Educational Specialist in School Psychology
Purpose: To provide advanced study beyond the master's degree and the minimum level of training required for the University's recommendation for certification as a school psychologist; emphasizes the development of practical, highly specialized professional skills at a level of accomplishment beyond the master's degree, but less than that required by the Ph.D. degree

Admission Procedures and Academic Requirements
Approved by the College of Education as well as the Graduate College is necessary before a student can be admitted. Approval by the College of Education is obtained when a faculty review committee representing the faculty in which the applicant wishes to do his or her major work is willing to accept the student in a program.

(For detailed program requirements and special admission requirements, see the College of Education publication, Admission Standards. See Special Admissions requirements. See the "Graduate College" section of the Catalog)

College of Education

7C458 Research in Vocational-Educational Counseling cr. 3, arr. Practice in counseling offers with vocational and educational problems and supervised experience in University Counseling Service; prerequisite: 7C453

7C459 Personal Adjustment Counseling cr. 3, arr. Practice in counseling offers with personal and interpersonal problems; supervised experience in Personal Adjustment Counseling Counseling, and supervised experience in University Counseling Service; prerequisite: 7C453

7C460 Supervising the Counseling Process cr. 3, arr. Supervision of students enrolled in counseling practice; prerequisite: consent of instructor

7C461 Research in Counseling cr. 3, arr. Supervision; consent of instructor

7C499 Practicum cr. 0 or 3, arr. Practicum of instructor

Preprofessional sequences for Certification in Educational Administration

7D911 Foundations of School Administration cr. 3 or 5

7D912 Administration of Schools cr. 3 or 5 Principles of organized school processes, with emphasis on principles common to all phases of educational administration; concept framework for administration of education and use of diagnostic materials relating to communication, decision making and organizational planning

7D913 Leadership in Educational Administration cr. 3 or 5 Principles of organized school processes, with emphasis on principles common to all phases of educational administration; concept framework for administration of education and use of diagnostic materials relating to communication, decision making and organizational planning.

7D914 Human Relations in the School Organization cr. 3 or 5 Principles of organized school processes, with emphasis on principles common to all phases of educational administration; concept framework for administration of education and use of diagnostic materials relating to communication, decision making and organizational planning.

7D915 Administration of Elementary and Secondary Schools cr. 3 or 5 Principles of organized school processes, with emphasis on principles common to all phases of educational administration; concept framework for administration of education and use of diagnostic materials relating to communication, decision making and organizational planning.

7D916 Supervision in the School Organization cr. 3 or 5 Organization, supervision and administration of schools; curricular planning, instructional supervision, principle relationship, role analysis and interpretation of educational administration basic concepts for administration of educational administration programs.

7D917 Administration of Educational Systems cr. 3 or 5 Administration of educational systems; role of school administration in the implementation of educational policies; administration of school administration programs.

7D918 Current Issues in the Structure and Governance of Education cr. 3 or 5 Organization/structure of roles of educational administration at local, intermediate and state levels: critical factor for satisfactory organization and operation of educational systems at all levels.

7D919 School Board Relations cr. 3 or 5 Relationships between school board and school administration; basic concepts and principles of democratic process, agents of organization.

7D921 Administration of Professional Personnel cr. 3 or 5 Problems of personnel administration; employment, tenure and policies affecting professional personnel of schools.

7D922 Administration of Special Education Programs cr. 3 or 5 Organization, operation and management of special education programs and services.

7D923 Administration of Student Services Programs cr. 3 or 5 Organization, operation and management of school activities and organizations.

7D924 Administration of School Buildings and Grounds cr. 3 or 5 Organization, operation and management of school activities and organizations.

7D925 Administration of Student Services Programs cr. 3 or 5 Organization, operation and management of school activities and organizations.

7D926 School Supervision and Evaluation of Public Education cr. 3 or 5 Organization, operation and management of school activities and organizations.

7D927 Administration of Special Education Programs cr. 3 or 5 Organization, operation and management of school activities and organizations.

7D928 Organization and Management of School Supervision and Evaluation of Public Education cr. 3 or 5 Organization and management of school activities and organizations.

7D929 Organization and Management of School Supervision and Evaluation of Public Education cr. 3 or 5 Organization and management of school activities and organizations.

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7D979 Organization and Management of School Supervision and Evaluation of Public Education cr. 3 or 5 Organization and management of school activities and organizations.
70351 Seminar: Urbanization
1 to 4 s.h.
Problems of urban centers related to education, city government, institutions; small city research projects conducted by students; special topics in urban problems and resource people
70352 Seminar: Elementary Supervision and Administration
2 or 3 s.h.
For experienced supervisors and administrators; emphasis on issue of major significance to elementary school organizational and instructional problem; evaluation of prior research and consideration of research problems; preparation of TD 361 or equivalent and consent of instructor
70353 Seminar: Problems in Public Administration
2 or 3 s.h.
Emphasis on structure and functions of state government and national government, status and role of inter-governmental relationships, precipitating forces generating improved school inter-governmental relations; model building
70356 Seminar: Computer Applications in Education
2 or 3 s.h.
Research and practice in application of computer to educational administration, instruction and research, prerequisites: TD203 and 70356
70360 Seminar: School Business Management
1 to 3 s.h.
Problems of school business management explored; emphasis on contemporary issues; students should be aware of student studies in local school districts
70375 Seminar: Research Design
1 to 4 s.h.
For graduate students working toward dissertation, developing dissertation topics and proposal, designing problem, methods of data gathering, design, language, form
70375 Research Prerequisites
2 or 3 s.h.
Supervised research project (special difficulty) developed and assigned; supervised experience in planning, design, management, analysis and reporting of research activity; summer student major responsibility, enrollment current and specific faculty research projects permissible consent of instructor
70375 Educational Administration Prerequisites
2 or 3 s.h.
Supervised experience in working with educational administration problems including organization, planning, evaluation and decision-making required of all PDasad candidates in residence
70377 Seminar: Organizational Theory and Educational Administration
2 or 3 s.h.
Student select work of particular interest or theoretical perspective and develop papers for presentation and discussion, prerequisites: TD201, 291-201, PDasad eligibility and consent of instructor
70382 Seminar: Value Problems in the Administration of Education
2 or 3 s.h.
Analysis of philosophical and sociological ideas in relationship to the education of public society; analysis of various ideas as to place of church and school in democratic society and democratic educational values and contemporary issues used to present formal for examination of issues, same as TD291
70394 Seminar: Special Problems in School Administration
2 or 4 s.h.
Administrative problems and issues experienced in actual school situations; course frequently offered as part of in-service programs, open to people who have extensive either in administration or who have had some administrative experience
70394 Seminar: Current Issues in School Administration
2 or 4 s.h.
Prerequisite: consent of instructor
70394 Seminar: Educational Research in Educational Administration
2 or 3 s.h.
Prerequisite: consent of instructor
70395 Seminar: Educational Research in Educational Administration
2 or 3 s.h.
Prerequisite: consent of instructor
70480 Pract. Thesis in Educational Administration
2 or 3 s.h.
Prerequisite: consent of instructor
Elementary Education
71081 Pre-Practicum Education
2 s.h.
To be taken concurrently with TE 150. Involves observing and reflecting elementary school teachers in performing daily tasks for at least six hours per week; objective to help students assess own potentialities and interest in teaching as occupation
7F:380 Seminar: Value Problems in the Administration of American Education 3 s.h.
Philosophical and sociological analysis of the American system for administra-
tion of public education; investigation of various ideas as to plans of both
conformity and dissent in democratic society and democratic educational system;
contemporary issues used to provide focus for examination of these issues, some
on the 23606.
Prerequisite: consent of instructor.
Prerequisite: consent of instructor.

Higher Education
7F:450 Individual Study: Higher Education cr. arr.
Prerequisite: consent of instructor.
7F:460 Designing Learning Programs for Health-Careers Education 3 s.h.
Emphasis placed on development and evaluation of educational programs sup-
ported planning procedures and technical analyses applied and practical
methods gained through establishment of working relationship with ongoing
educational program; activities individualized to meet various backgrounds and
objectives; some on the 37:460.
7F:462 Learning Strategies for Health-Careers Education 3 s.h.
Role of health specialist as teacher evaluated; variety of learning strategies explored
through observation, discussions, demonstrations and experiences within actual
hospital settings; individualized self-paced learning methods evaluated to meet
various health backgrounds and objectives; some on the 37:462.
7F:475 Post-High-School Faculty Development Workshop 1 or 3 s.h.
Designed to provide post-high-school instructors with work in either discipline
area or in some aspect of professionalism; workshop topics may include
problems for upgrading of administrative and supportive personnel as well as
faculty members in post-high-school institutions.
7F:419 Higher-Education Colloquium cr. arr.
Students and faculty invited to submit seminar topics and other papers for consid-
eration; projects must be sponsored by at least one faculty member in higher
education, and must be approved by the Departmental Executive; no project offered
more than twice under this description; students may repeat course up to six times.
7F:421 Problems in College Teaching 2 or 3 s.h.
Principle of course planning, teaching methods, evaluation techniques and
assessment of instructional skills and objectives.
7F:419 Structure and Organization of American Higher Education 2 or 3 s.h.
Functions of various types of institutions: community college, college, universi-
ty, technical, professional, policy determination at federal, state and
college levels; some on 7F:419.
7F:420 Intern Seminar cr. arr.
Directed to prepare interns to assume faculty or administrative role in community
college setting, preparing intern in community-college teacher preparation
program or preparing to enroll in community-college internship program during
the summer. 7F:420 (2 s.h.) or 7F:420P (P P 3 s.h.); in order.
7F:420P Workshop Higher Education 2 or 3 s.h.
Prerequisite: 7F:420. Administration of post-secondary education; legal, financial,
and staffing aspects of college-religious and non-religious education.
7F:422 Facilitating Learning in Health-Careers Education 3 s.h.
Role of health care volunteer as teacher explored. Emphasis on project, student
experience with variety of learning strategies through readings, discussion,
practice, group work, small group and actual classroom activities.
7F:422 may be repeated as equivalent to 7F:422.
7F:425 For Survey of organizations, administration and curriculum 2 or 3 s.h.
7F:425C College-College Workshop 8 s.h.
7F:426 Individual Instruction in Higher Education 3 s.h.
Prerequisite: consent of instructor.
7F:428 Seminar: Higher Education cr. arr.
Analysis of special problems in the development and preservation of one major
college or university.
7F:428 Seminar: Recent Research in Higher Education 3 s.h.
Assessment of college environment and student potential; effect of college
experience upon student achievements, aspirations and personal development.
7F:430 Curriculum Development in Higher Education 3 s.h.
Prerequisite: consent of instructor.
7F:431 Administrative Decision-Making in Higher Education 2 or 3 s.h.
Administrative problems in higher education using simulation materials.
7F:431 Seminar: Administration in Higher Education 2 or 3 s.h.
Prerequisite: consent of instructor.
7F:435 Research Allocations in Higher Education 2 or 3 s.h.
Examination of economics of higher education, source of support for higher
education, allocation of educational resources, finance planning and control, tax-
payer sharing of costs.
7F:436 College-Teaching Internship 3 s.h.
Full semester teaching experience consisting of supervised one-half-time teaching
load at a community-college level or at an undergraduate level in a four-year-instruc-
tion-concurrent research-assignment program. 7F:436 consists of instructor and approved by cooperating institution.
7F:439 Practicum in Higher Education 3 s.h.
Prerequisite: consent of instructor.
7F:440 History and Philosophy of American Higher Education 2 or 3 s.h.
Discusses of scholarly literature and consideration of special topics relative to
American education; relationship to development of culture, individual and
institutional life of the U.S.; structure of historical and philosophic foundations
on present and future of higher learning in U.S.; prerequisite: 7F:422 and appro-
priate background in philosophy of history, or consent of instructor.
7F:444 Seminar: Health-Careers Education 1 s.h.
Focus for research papers and special problems in health-careers education,
exchanging ideas and for relating academic studies to role of health-care
educator; may be repeated, prerequisite: consent of instructor.
7F:490 M.A. Thesis in Higher Education cr. arr.
Prerequisite: consent of instructor.
Prerequisite: consent of instructor.
7F:499H PhD. Thesis in Higher Education cr. arr.
Prerequisite: consent of instructor.

Educational Psychology, Measurement and Statistics
7F:19 Educational Psychology and Measurement cr. arr.
Factors in mental development and classroom learning; child and adolescent char-
acterization problems in classroom management; construction, use, interpretation
and evaluation of educational tests; open only to undergraduates; same as Psy-
chology 37:19.
7F:29 The Learner cr. arr.
Classification of classroom learning, individual differences in physical, emotional
and intellectual factors.
7F:370 Child Development
7F:39 Social Behavior of the School-Age Child 3 or 2 s.h.
Social development, peer relationships, development of attitudes and interests,
effects of social status on social development.
7F:426 Teaching Psychology and Psychology cr. arr.
Psychology in teaching and learning: development concepts, social processes,
language and thought; personality and moral ideals, models of teaching and
research, theory and applications of learning process, same as Psychology 37:26.
7F:430 Research methods in Psychology cr. arr.
Research and discussion relating physical, psychological and cultural orientations
of achievement behavior in contemporary society; traditional academic literature on
academic achievement based on fiction, films and materials reflecting current youth
culture.
7F:434 Introduction to Programmed Learning cr. arr.
Introduction to principles of program learning, techniques of teaching machines
and other devices for use in accelerating learning, model programs for automated
teaching; class discussion and laboratory. 7F:434 and 7F:434P, may be repeated.
7F:440 Educational Research Methodology 2 or 3 s.h.
Process for planning, conducting and reporting research, evaluation of current
methods in educational research; prerequisite or completed 7F:414.
7F:446 Research in Educational Methodology 2 or 3 s.h.
Analytical and interpretative research of research reports, descriptive statistics
(frequency distribution, correlation, regression, etc.); introduction to statistical inference (normal
curve sampling theory, simple linear) introduction to correlation and linear
regression, same as Statistics 271:4 and Psychology 37:41.
College of Education

78:307 Seminar: Aesthetic Education 2 or 3 s.h.
Thematic aesthetics as related to teaching instructional and learning methods; nature of aesthetic experience in visual and verbal arts; aesthetic model as relates to other disciplines in education in review of multi-art education programs; same as 78:305; may be repeated.

78:311 M.A. Seminar: English Education 2 s.h.
Theories of instruction as related to teaching instruction and learning methods; nature of aesthetic experience in visual and verbal arts; aesthetic model as relates to other disciplines in education in review of multi-art education programs; same as 78:305; may be repeated.

78:311 Workshops for Secondary School Journalists Teachers 2 s.h.
Semi-annual workshops geared toward teachers of journalists and mass media, emphasis on photography, editorial content, curriculum development, mass communication media; basic journalism techniques and other related journalistic activities; same as Journalism 5101.

78:330 Seminar: Mathematics Education 2 s.h.
Prerequisites: consent of instructor.

78:330 Problems in Mathematics Education 2 s.h.
Review of research in teaching of mathematics, K-12 including examination of teaching of algebra and geometry, grade placement of concept and methodology; similar institutions; same as 78:350.

78:341 General Music in Secondary Schools 2 s.h.
Analysis of vocal and instrumental approach to curriculum development, including abilities of appropriate instructional materials and teaching techniques.

78:342 Special Studies: Music Education 2 s.h.
Prerequisites: consent of instructor.

78:344 Music Education Workshops: General and Choral Music 2 s.h.
In the Secondary Schools 1 s.h.

78:456 Public School Curriculum in Physical Education 3 s.h.
Biological, social and psychological factors influencing curriculum in physical education; current trends; same as Physical Education for Men 37327.

78:550 Seminar: Science Education 2 or 3 s.h.
Research of reports projects entered in program such as; program of research at M.S. and Ph.D. level; guest lecturers; group discussion and analysis of individual presentations; required of all Ph.D. candidates each semester; one registration required of all master's candidates; same as 78:320.

78:551 Special Problems in Science Education 2 or 3 s.h.
Prerequisites: consent of instructor.

78:552 Problems in Supervision 2 s.h.
Prerequisites: consent of instructor.

78:553 Special Problems in Counseling Psychology 2 or 3 s.h.
Prerequisites: consent of instructor.

78:557 Field Service Project in Secondary Education 2 s.h.
Prerequisites: consent of instructor.

78:558 School Social Work Education 2 s.h.
Prerequisites: consent of instructor.

78:566 Educational Specialist Research in Secondary Education 2 s.h.
Prerequisites: consent of instructor.

78:568 Seminar: Critical and Art Education 2 s.h.
Analysis and evaluation of current concepts of art and child development; perception, creativity and art education; historical development of theories of child development; same as 78:568.

78:568 Research in Art Education 2 s.h.
Prerequisites: consent of instructor. Advanced study of research methods and design; applicable to thesis or dissertation preparation. May be repeated as credit or as special problems course; same as 78:568 and 78:640.

78:657 Problems in Physical Education 2 s.h.
Prerequisites: consent of instructor, same as English 6471.

78:641 The Psychology of Teaching Music 2 s.h.
Prerequisites: consent of instructor, intellectual and emotional measures, motor abilities of children, teaching methods, etc.

78:642 Music Education: Advanced Observation and Laboratory 2 s.h.
Prerequisites: consent of instructor.

78:643 Measurement and Evaluation in Music 2 s.h.
Prerequisites: consent of instructor.

78:644 Research in Music Education 2 s.h.
Prerequisites: consent of instructor.

78:646 Social and Psychological Factors in Music 2 s.h.
Prerequisites: consent of instructor.

78:649 Seminar: Research in Secondary Education 2 s.h.
Identification of problems and development of plans for conducting research in music education.

78:650 Psychol. Tests 2 s.h.
Prerequisites: consent of instructor.

Special Education

70:100 Introduction to and Observation of Exceptional Children 2 s.h.
Various types of exceptional children and their educational problems, includes practicum of four hours per week, observing and working with children with various types of handicaps, referred to majors in special education; to be taken in first semester of sophomore year; offered the second semester of sophomore year.

70:101 Introduction to and Observation of Exceptional Children 2 s.h.
Continuation of 70:100 and required for special education majors; practicum in classroom situation; same as 70:100.

70:102 and 70:103 Teaching Exceptionally Different 2 s.h.
Offered second semester of junior year.

70:23 Instructional Methods and Procedures in Special Education 2 s.h.
Broad course continues sophomore-level approach of combining formal coursework with two to four hours of practice work per week; emphasis on selection and utilization of various methods and materials applicable for use with different disabilities; same as 70:102.

70:231 Instructional Methods and Procedures in Special Education 2 s.h.
Prerequisites: consent of instructor, same as 70:100.

70:250 Instructional Methods and Procedures in Special Education 2 s.h.
Prerequisites: consent of instructor.

70:300 Exceptional Children 2 s.h.
Survey of exceptional children and school programs for transfer students and majors in special education; same as Psychology 3111.

70:303 Special Education of Exceptional Children 2 s.h.
Selection of pupils, organization of program, management of research, current research; special methods and materials for instructing exceptional children; same as 70:300.

70:304 Development of Exceptional Children 2 s.h.
Selection of pupils, organization of program, management of research, current research; special methods and materials for instructing exceptional children; same as 70:303.

70:307 Development of Exceptional Children 2 s.h.
Selection of pupils, organization of program, management of research, current research; special methods and materials for instructing exceptional children; same as 70:300.

70:312 Industrial Methods for Exceptional Children 2 s.h.
Individual and group service for exceptional children; course designed for special education majors; same as 70:102.

70:313 Teaching the Mentally Retarded Child 2 s.h.
Selection of pupils, organization of program, management of research, current research; special methods and materials for instructing exceptional children; same as 70:300.

70:314 Instructional Methods in Education of the Physically Handicapped Child 3 s.h.
Prerequisites: consent of instructor, same as 70:100.

70:315 Orientation to Rehabilitation of the Physically Handicapped Child 2 s.h.
Prerequisites: consent of instructor.

70:316 Medical, therapeutic and educational aspects; several professions involved in evaluation, medical, therapeutic, and educational aspects; nature of various handicapping conditions, causes and special considerations of each.

70:317 Vocational Resources for Exceptional Children 2 s.h.
Prerequisites: consent of instructor.

70:318 Professional Development of the Social Worker 2 s.h.
Prerequisites: consent of instructor, observed in social work agency; course designed for social work majors; same as 70:300.

70:319 Social Studies 2 s.h.
Prerequisites: consent of instructor.

70:320 Social Studies 2 s.h.
Prerequisites: consent of instructor.

70:321 Social Studies 2 s.h.
Prerequisites: consent of instructor.

70:322 Social Studies 2 s.h.
Prerequisites: consent of instructor.

70:323 Social Studies 2 s.h.
Prerequisites: consent of instructor.

70:324 Social Studies 2 s.h.
Prerequisites: consent of instructor.

70:325 Social Studies 2 s.h.
Prerequisites: consent of instructor.

70:326 Social Studies 2 s.h.
Prerequisites: consent of instructor.

70:327 Social Studies 2 s.h.
Prerequisites: consent of instructor.

70:328 Social Studies 2 s.h.
Prerequisites: consent of instructor.

70:329 Social Studies 2 s.h.
Prerequisites: consent of instructor.
College of Education

prerequisite consent of instructor and completion of M.A. program in behavior analysis.

75100 Seminar: Advanced Procedures in Teacher Education for Prospective Teachers of Children and Youth with Behavior Problems

75130 Research in Special Education

75136 Special Education 3 s.h. Selected topics, preparation and presentation of research projects. Graduate students only. Prerequisite: consent of instructor

75224 Research Practicum in Special Education 1-3 s.h. Areas of special research in remedial education; real-world research projects and designs; particular emphasis on planning, managing and reporting research. Students assigned to current projects for practical experience in research. Prerequisite: consent of instructor

75344 Seminar: Program Development in Special Education 3 s.h. Prerequisite: consent of instructor

75367 Seminar: Current Issues in Special Education 3 s.h. Prerequisites: 75136 and consent of instructor

75380 Practicum in College Teaching 3-12 s.h. Prerequisite: consent of instructor

75382 Field Service Project in Special Education Internship 2-12 s.h. Prerequisite: consent of instructor

75383 MA: Thesis in Special Education 1-6 s.h. Prerequisite: consent of instructor

75384 Specialist in Educational Research 1-6 s.h. Prerequisite: consent of instructor

75385 Research Project-Specialist Research 1-6 s.h. Prerequisite: consent of instructor

75410 Ph.D. Thesis in Special Education 1-6 s.h. Prerequisite: consent of instructor

Educational Media

75410 Operation of AV Equipment 1 s.h. Prerequisite and practice in operating still and motion-picture projects, field recording, record players, slide reproducers, copy machines and development process

75420 Theory and Practice of Educational Communications 3 s.h. Relates to various instructional techniques to problems in managing time, learning, "state of the art" of audio-visual media, development of instructional materials. Prerequisites: 75410 and consent of instructor

75430 Planning and Production of Instructional Materials 1-6 s.h. Theory and practice of planning and producing instructional materials for mass communication by classroom teachers, emphasis on learning, design, engineering, production, depicting, simple and creative writing and photographic techniques. Prerequisite 75410 or consent of instructor

75431 Professionalizing of Instructional Materials 1-6 s.h. Development of instructional materials using still or motion-pictures photography, audio, television, and film. Laboratory techniques, basic skills covered. Students produce self-instructional projects using selected media. Prerequisite: 75177 or consent of instructor

75470 Communication Through Drawing 2 or 3 s.h. Principles of visual observation, discrimination and practical use of the five senses, use and shapes used in drawing flat and three-dimensional objects, including in art education curriculum

75471 Principles and Techniques of Graphic Communication 2 or 3 s.h. Language and design of graphic communications materials: principles of form, composition, use in working with text and graphics symbols, fundamentals, layout and design, and simple printing techniques, as an art, historical survey

75472 Survey of Educational Media Research 2 or 3 s.h. Investigation of research from behavioral science, communication technology and mass media designs as related to systems of instruction and mediated learning experiences

75473 Administration of Educational-Media Programs 2 or 3 s.h. Principles of organizational and personnel management as applied to directing media programs. Prerequisites: 75177 or 75128 or equivalents

75476 Educational Media and the Systems Approach to Instruction 1-3 s.h. Planning for instruction through systematic development of learning units effectively utilizing media, skills and media; prerequisites: consent of instructor

75478 Research in Educational Media 1-3 s.h. Research techniques: instrumental design and correlation for education publications. Prerequisites: 75443 or equivalents, 75128, 75121 and consent of instructor

75480 Internship in Educational Media 1-12 s.h. Prerequisite: completion of 12 credit hours in a media program and consent of instructor

75493 M.A. Thesis in Educational Media 1-6 s.h. Prerequisite: consent of instructor

75494 Specialist in Educational Media 1-6 s.h. Prerequisite: consent of instructor

75495 Ph.D. Thesis in Educational Media 1-6 s.h. Prerequisite: consent of instructor

75496 Practicum in Educational Media 3 s.h. Off-campus, supervised administrative and on-site experience in public schools, local agencies, or industry

75498 Special Topics in Educational Communication and Technology 1-6 s.h. Designed for the needs of special-interest groups, to provide concentrated study of specific concerns; varies each semester; prerequisite: consent of instructor

75593 M.A. Thesis Educational Media 1-6 s.h. Prerequisite: consent of instructor

75594 Specialist Research in Educational Media 1-6 s.h. Prerequisite: consent of instructor

75595 Ph.D. Thesis Educational Media 1-6 s.h. Prerequisite: consent of instructor

Interdisciplinary

75601 Current Issues in Education 2 s.h. Seminar to discuss implications for educational practice of recent important books in field; participants present discussions to readers in major group discussions; covers design to provide opportunity for exchange of among students and faculty from all disciplines in College of Education

75602 Philosophy of Psychology and Education of the Culturally Different 2 s.h. Readings and discussions to understand effects of cultural differences in development and deprivation on psychology development and school achievement combined with field project of student's choice, prerequisite: consent of instructor

College of Education
The College of Engineering comprises six departmental subdivisions. Programs are offered leading to the Bachelor of Science, Master of Science and Doctor of Philosophy degrees in chemical, civil, electrical, industrial and management, and mechanical engineering, and to the M.S. and Ph.D. degrees in mechanics and hydraulics.

Any of the undergraduate programs may be combined with the Bachelor of Arts in the five-year option, and any department may sponsor the general Bachelor of Science degree in engineering for the student electing to pursue interdisciplinary studies of a broader nature.

Such flexibility of program arrangement is one feature of the engineering curriculum at Iowa. First implemented in 1969, this curriculum consists of four stems extending through all four years of undergraduate study. The four stems are socio-humanistic studies, mathematics, basic and applied science, and analysis and design. The analysis and design sequence begins with introduction to engineering in the first semester of the freshman year and terminates with departmental specialization in an interdisciplinary combination in the senior year.

Undergraduate students in engineering at Iowa take more than one-third of their instruction in common with students in other colleges, and interdisciplinary interests are encouraged.

The College is accredited by the Engineers Council for Professional Development.

Degree Requirements
Baccalaureate Degrees
The Bachelor of Science degree in engineering requires at least 128 semester hours of credit. The candidate must be enrolled in the College of Engineering for at least the last 30 semester hours or 45 of the last 60 semester hours.

All undergraduate students in engineering must complete a social science sequence totaling at least six semester hours of credit in courses chosen from the departments of Anthropology, Economics, Geography, Journalism, Political Science, Psychology, Social Work or Sociology. All undergraduate students in engineering must also complete the College of Liberal Arts historical- cultural core requirement, or complete a historical-cultural sequence totaling at least six semester hours of credit in courses chosen from the departments of American Civilization, East Asian Languages and Literature, Classics, English, History, Linguistics, Philosophy, Speech and Dramatic Arts or the schools of Art, Music or Religion. Advanced courses in any foreign language department will also satisfy the historical-cultural requirement.

Any department course in art and music are not acceptable.

Departmental course and hour requirements in engineering are designated in the curriculum outlines of each department.

The Combined Program
In response to an increasing demand for engineers with strong backgrounds in the humanities, social sciences and languages, Iowa offers a combined program leading to the Bachelor of Arts degree in the College of Liberal Arts and the Bachelor of Science degree in engineering or in a designated department of engineering. By proper scheduling of coursework in consultation with advisors from the College of Liberal Arts and Engineering, the student in the combined program can meet the baccalaureate degree requirements of both colleges in five academic years.

Professional Registration
Admission to practice professional engineering is governed by the laws of each state and requires registration. The minimum standards include graduation from a recognized engineering curriculum of at least four years, followed by at least four years of practical experience. The Iowa Board of Engineering Examiners has adopted the plan of admitting College of Engineering graduates to the rating "Engineer in Training" by examination on engineering fundamentals given at the University near the time of graduation. Completion of registration as a "Professional Engineer" requires an advanced examination following professional experience.

Faculty
Because the College recognizes the value of interchange between faculty and students, core courses are taught largely by senior faculty. Recognizing that a university faculty has a responsibility for the production as well as the dissemination of knowledge, the College seeks to achieve a balance between teaching and research. Members of the faculty in Engineering represent a wide range of practical, instructional, research and consulting experience and have made significant contributions to the professional literature in their areas.

Facilities
The Engineering Library
The Engineering Library is the center of College activity. Its collection includes 32,000 books and 750 periodicals. It is equipped with microfilm and microfiche readers.

Chemical Engineering Laboratories
The Department of Chemical Engineering is located in the Chemistry-Botany Building. Its main laboratories include pilot-
plant equipment for the study of industrial evaporation, distilla-
tion, drying, fluid flow and heat transfer. A section of the labora-
tory devoted to nuclear technology contains a subcritical nuclear
reactor, a pulsed neutron generator and a reactor simulator. Laboratories have recently been added for biomaterials research.
Smaller laboratories are provided for investigations of plastics
and other engineering materials. Laboratories for individual re-
search are available to graduate students; these are equipped
with chromatographs, analog computers and other instruments.

Electrical Engineering Laboratories
The instructional laboratories of the Department of Electrical
Engineering include dynamic systems, digital systems and con-
trol systems laboratories, and a general-purpose laboratory for
special projects. Research laboratories are equipped for investi-
gations in plasma physics, signal analysis, electronic circuits and
devices, and digital systems. A computer laboratory is provided
for undergraduate and graduate student use for study and re-
search in analog, digital and hybrid computation and simulation.

Environmental Engineering Laboratories
Facilities for environmental engineering teaching and research
are located in the Phillip P. Morgan Sanitary Engineering
Laboratory, University Water Treatment Plant and the Depart-
ment of Preventive Medicine and Environmental Health of the
College of Medicine. Research in water pollution abatement
is conducted primarily in the Morgan Laboratory located at
the Iowa City University wastewater treatment plant. This labora-
tory is especially equipped for pilot-plant projects and contains
a full-scale activated sludge aeration tank, as well as an activated
sludge pilot plant. The wastewater treatment plant is used as
a full-scale system for research. Water quality control and limno-
logical research are conducted at the New University Water
Treatment Plant.

Industrial Engineering Laboratories
The Department has laboratories equipped for research in the
principal areas of materials and processing, including materials
science, powder science, metal casting, cutting and fabricating.
Human factors laboratories are equipped to investigate basic
motor capabilities and the effects of select skill and environ-
mental variables. Unique equipment for the measurement of
human factors includes electronic timing, force sensing, record-
ing and computation equipment.

Mechanical Engineering Laboratories
The Mechanical Engineering laboratories contain instruments
and equipment for experimental investigations in a variety of
fields. These fields include thermodynamics, thermal systems,
heat transfer, gas dynamics, behavior of materials, control sys-
tems and machine dynamics. The laboratories provide educa-
tional experience in all important scientific areas on which
mechanical engineering is based and valuable experience in mod-
ern methods of measurement and analysis including use of mod-
ern computers.

Structures and Materials Testing Laboratories
These laboratories are equipped for the determination of physi-
cal properties of materials of engineering construction, such as
soils, aggregates, concretes, metals, timber and plastics. Included
are a compression testing machine, a universal testing machine
and an axial testing machine, along with mechanical and elec-
tronic instrumentation and photodensitometer equipment for the
accurate measurement of deformations under load. The structural
laboratory also contains a prestressed beam and frame which
permits construction of prestressed concrete structural mem-
ers. A humidity control room and curing rooms are also availa-
able. A soils laboratory contains consolidation and triaxial testing
equipment of the latest design. Special equipment is available for
negative pore water pressure studies and model flooding tests.

Hydraulics Laboratory
Located on the west bank of the Iowa River at the end of the
University dam, this laboratory houses the latest facilities for
undergraduate and graduate laboratory instruction, and for
basic and applied research by staff and students in the area of
hydraulics and fluid mechanics. The equipment includes an IBM
1550 data acquisition and control system for online analysis of
experimental data, a 330-foot tow tank, several flumes and
wind tunnels, a low-temperature flow facility for investigation of
ice phenomena, a dispersion flume and a wave tank.

Computer Services
Services of the University Computer Center are used extensively
by students and faculty of the College, under the auspices of the
College Computing Center. The College itself maintains
remote terminals for conversational access to the University
computer and key-punch equipment for computer cards.

Placement Services
Students and alumni can avail themselves of the placement serv-
cices provided by the College of Engineering. Interview rooms
and a placement library of informational material are located
in the Engineering Building. Assistance is available for arranging
interviews and for job opportunities.

Institute of Hydraulic Research
The Institute of Hydraulic Research has earned international
recognition for its research and educational activities in the area
of fluids engineering since it was organized in 1931. Current
research is oriented toward problems related to environmental
pollution, bioengineering, savo hydrodynamics, and instrumen-
tation and data handling for fluids research. Student participa-
tion in all research and consulting activities characterizes the
Institute's operation.

Student Organizations and Activities
The entire College of Engineering student body is organized as
the Associated Students of Engineering.

Engineering students publish a monthly periodical, the Iowa
Tornado.

Student branches of the American Institute of Chemical Engi-
Chemical Engineering

Information in industry through various channels available, conducted as seminar in group activity, with knowledge obtained by reading, with practical derived from instructing various groups, with application and feedback drawn from working in self-chosen projects. Fourth hour earned by writing well-prepared and well-organized paper or report. Prerequisite: senior standing.

Communication in Business 5 s.h.

Practice in application of knowledge of group interaction net of principles of human behavior in teaching groups about communication in various engineering systems is also involved and useful feedback derived from seminar. Meetings held for exchange of ideas, matching with advising, practice and free required reading selected by each student. Four hours earned by writing well-prepared and well-organized papers or reports. Co-listed with CSE 51103 and consent of instructor.

51103 Technology and Society 3 s.h.

For liberal arts and engineering students, to maximize awareness of relation between technology and human behavior, environment; it includes survey for analyzing projected consequences of technological innovation against human values, to evaluate implications of actual forms underlying technological change, to recognize students investigate four case studies of higher-specified and insightful instances of individual solution whose consequences interestingly illustrate cases in Civil Engineering 55-105 and American Civilization 45-10.

Chemical Engineering

Department Head: Karl Kassmeyer
Degree offered: B.S., M.S., Ph.D.

Undergraduate Programs

The undergraduate programs provide the basis for professional training in engineering, particularly that which deals with matter undergoing chemical change. Most chemical engineering graduates are employed in the chemical industry or in the plastics, rubber synthetic fiber, pharmaceutical and petroleum industries. With the B.S. in chemical engineering, the engineer is prepared to do engineering work in design, supervision, development and sales.

To prepare the student for the chemical engineering profes-
sion, the curriculum includes extensive training in chemistry, in addition to the basic engineering core of mathematics, engineering design, engineering sciences and humanities.

Undergraduate Curriculum

<table>
<thead>
<tr>
<th>Year</th>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>Principles of Chemistry I, II</td>
<td>3 3 7</td>
</tr>
<tr>
<td></td>
<td>Elementary Chemistry</td>
<td>2 2</td>
</tr>
</tbody>
</table>
|         | Literature and Composi-
|         | tion                   | 4 4 8   |
|         | Mathematics I, II       | 5 5 10  |
|         | Introduction to         | 4 4 8   |
|         | Engineering I, II       | 16 18 34|
| Sophomore | Organic Chemistry I, II | 3 3 6   |
|         | Physical Chemistry I, II| 0 2 2   |
| Minor   | Mathematics III, IV     | 3 3 6   |
|         | Dynamics Systems Anal-
|         | yses I, II              | 3 3 6   |
|         | Mechanics of Solids     | 4 0 4   |
|         | Process Calculations    | 0 3 3   |
|         | Socioeconomic Elective  | 3 3 6   |

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Chemistry I, II</td>
<td>3 3 6</td>
</tr>
<tr>
<td>Advanced Chemistry</td>
<td></td>
</tr>
<tr>
<td>Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>Physics I</td>
<td>0</td>
</tr>
<tr>
<td>Principles of Design</td>
<td>3 0 3</td>
</tr>
<tr>
<td>Electromagnetic Theory</td>
<td>4 0 4</td>
</tr>
<tr>
<td>Mechanics of Fluids and</td>
<td>4 0 4</td>
</tr>
<tr>
<td>Timed Processes</td>
<td></td>
</tr>
<tr>
<td>Design for Energy and</td>
<td>0 4 4</td>
</tr>
<tr>
<td>Momentum Transfer</td>
<td></td>
</tr>
</tbody>
</table>
| Survey of Chemical In-
| dustry                 | 0 1 1   |
| Socioeconomic Elective  | 0 3 3   |
|                        | 14 17 31|

Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure of Materials</td>
<td>0 3 3</td>
</tr>
</tbody>
</table>
| Chemical Reaction Ki-
| netics                | 0 2 2   |
| Mass Transfer Opera-
| tions                | 3 0 3   |
| Unit Operations         | 2 2 4   |
| Laboratory I, II        |         |
| Chemical Engineering   | 3 0 3   |
| Thermodynamics          |         |
| Economics in Design     | 3 0 3   |
| Chemical Engineering   | 0 3 3   |
| Process Design          |         |
| Socioeconomic Elective  | 3 3 6   |
| Technical Elective      | 3 0 2   |
|                        | 17 13 128|

Graduate Programs

The programs leading to the M.S. and Ph.D. are more flexible than the undergraduate program. The emphasis is on research, and graduates are employed in research and development of chemical manufacturing processes. About one-third of the program is devoted to a research project, and a thesis is required for each degree.

The principles of chemistry, physics, equilibrium and rate processes which are fundamental to chemical engineering have wide application, and this has resulted in interdisciplinary re-
search involving biomedical problems, dental materials and envi-
Courses Primarily for Undergraduates

52-191 Emergency Design 5 or 4 s.h.
Intermediate course in design of chemical processes and process equipment, requiring application of process calculation, thermodynamics, and operations theory, simulation; three recitations, four laboratory periods. 52-141, 52-150
52-185 Survey of Chemical Industry 1 s.h.
Practicum training in the chemical industry. Days and times to be announced. 52-150
52-200 Industrial Course 2 s.h.
Practicum training in the chemical industry. Days and times to be announced. 52-150
52-240 Special Problems 1-4 s.h.
Practicum training in the chemical industry. Days and times to be announced. 52-150
Civil Engineering

Department chairman: Harrison Kane
Degrees offered: B.S., M.S., Ph.D.

Undergraduate Program

Civil engineering is the engineering of constructed facilities: of buildings, bridges, tunnels and dams; of harbors and airports; of waterways, railways and highways; of water power, irrigation, drainage and water supply; of sewerage and waste disposal and environmental-health systems.

In fact, if something is one of a kind, if it is large, if it is important in the daily lives of a great many people, the chances are that it was planned, designed and constructed by civil engineers.

The course of study in civil engineering at Iowa builds on the new College of Engineering curriculum and provides the basis for further depth of study in areas of specialization such as structural and foundation, environmental or transportation engineering.

Topics of study include transportation systems, water quality and air pollution control, solid-waste management, structural analysis and design, and soil mechanics. Additional specializations, or greater breadth, may be acquired through the selection of equivalent technical electives.

Undergraduate Curriculum

Freshman Year
4:1 Principles of Chemistry I 3
4:6 Elementary Chemistry Laboratory 2
8:5:6 Literature and Computation I-II 8
32M:35,36 Mathematics I-II 10
51:12 Introduction to Engineering I-II 8
51:18 Statics 2
33

Sophomore Year
22M:37,38 Mathematics III-IV 6
51:6 Thermodynamics I 4
51:11,12 Dynamic Systems Analysis I-II 6
51:13 Materials Science 3
51:9 Dynamics 3
51:18 Mechanic of Fluids and Transfer Processes 4
51:19 Mechanics of Deformable Bodies 3
51:220 Social and Humanistic Electives 3
32

Junior Year
225:59 Probability and Statistics for Engineering and Physical Sciences 3
51:21,22 Principles of Design I-II 6
53:35 Structural Analysis I 4
53:41 Civil Engineering Design I 3
53:61 Flow Systems in Environmental Engineering 3
53:81,82 Professional Seminar 0
53:161 Principles of Environmental Engineering 3
53:173,174 Transportation Engineering I-II 6
51:220 Social and Humanistic Electives 3
31

Senior Year
29:42 Physics I 3
51:25 Electromagnetic Theory 4
51:83,84 Professional Seminar 0
53:100 Civil Engineering Design II 3
53:180 Senior Seminar 1
53:184 Soil Mechanics 3
51:220 Social and Humanistic Electives 9
51:220 Technical Electives 9
32

Total 129

Graduate Programs

Work is offered in the general area of environmental engineering, structural engineering, and foundations, traffic engineering and transportation planning, public works engineering, and water resources engineering. The environmental-engineering and science program is an approved interdisciplinary graduate program carried out cooperatively with the Department of Preventive Medicine and Environmental Health in the College of Medicine.

Admission Requirements

The prerequisite for admission to candidacy for the master's degree is normally the earning of a baccalaureate degree in civil engineering or a physical science, with a cumulative grade-point average of 2.5 (A = 4). Candidates who do not have an engineering degree or whose grade-point averages are slightly lower are invited to correspond regarding admission possibility. Undergraduate degrees in chemistry or the biological sciences are especially suitable for advanced study in the environmental engineering program. For admission to candidacy for the doctorate, the minimum grade-point average is 3.2, based upon previous graduate work.

The applicant must meet the general admission requirements of the Graduate College (see "Graduate College").

Master of Science

There is considerable flexibility in the curriculum for the master's degree. The plan of study must include a minimum of 30 semester-hours credit, with or without thesis as determined by the candidate and his or her graduate committee.
Doctor of Philosophy
The doctoral degree is granted primarily on the basis of achieve-
ment and has no prescribed curriculum. The candidate will nor-
tively need at least three years of full-time work beyond the
undergraduate degree. He or she must pass written and oral
comprehensive examinations and must prepare and defend a dis-
sertation which contributes to knowledge in his or her field.
No foreign language is required.
The Department cooperates in interdisciplinary doctoral pro-
grams with the Program in Applied Mathematical Sciences (see “Graduate College”).

Financial Aid
A number of fellowships, traineeships, assistantships or other
forms of aid are available. Selection of recipients is usually based
on scholastic achievement and research interest.
Staff: professors Brandon, Kane, McCuskey, associate professors
Dagen, Mathew, McDonald, Meyers, O’Mara, Paulson, adjunct
associate professor Willis, assistant professors Fisher, Wilson; in-
terdepartmental faculty (Preventive Medicine and Environmental
Health) Berry, Long, Powell, McMullen

Courses Primarily for Undergraduates
53:32 Survey I 3 a.h.
Theory of measurement, methods and computations; mapping; remote sensing;
geodetic surveying, photogrammetry and astronomy
5 or 4 a.h.

53:61 Structural Analysis I 3 a.h.
Structural analysis of beams, frames and simple structures.

53:62 Stress Analysis 3 a.h.
Stress analysis of beams and frames.

53:63 Computer Applications in Structural Analysis 3 a.h.
Analysis of structures by use of digital computers; slope deflection, moment dis-
tribution; theory of plastic analysis in structural analysis, prerequisite: 53:32

53:64 Structural Design I 3 a.h.
Design of structural systems, columns and beams; reinforced concrete elements;
concrete buildings; design of steel buildings; design of arches, domes, shells.

53:65 Stress Analysis II 3 a.h.
Stress analysis of shells, arches and domes; design of arches, domes, shells.

53:66 Structural Analysis II 3 a.h.
Analysis of structures by use of digital computers; slope deflection, moment dis-
tribution; theory of plastic analysis in structural analysis, prerequisite: 53:32

53:67 Concrete Structures 3 a.h.
Design of concrete structures, columns and beams; reinforced concrete elements;
concrete buildings; design of steel buildings; design of arches, domes, shells.

53:68 Computer Applications in Structural Design 3 a.h.
Design of structural systems using digital and analog computers; theories of struc-
tural analysis.

53:102 Reinforced Concrete 3 a.h.
Analysis and design of statically determinate and indeterminate structures and
structures with discontinuities; review of current literature and specifications, pre-

53:103 Environmental Microbiology 3 a.h.
Elements of microbiology for environmental engineers; applications in water qual-
ity control, lecture and laboratory; prerequisite or computer 53:106, course in
biology or consent of instructor.

53:105 Environmental Toxicology 3 a.h.
For engineers and others who desire knowledge of nature, metabolites, ecological
effects of toxic substances in environment, prerequisite: course in biology or consent
of instructor.

53:106 Environmental Health 3 a.h.
Lectures covering major problems in environmental health concern to modern
society: governmental regulations of food and drugs, air pollution, waste disposal,
water quality, traffic noise, occupational health, community disease, etc. studies
in public health laboratories.

53:107 Environmental Chemistry II 3 a.h.
Laboratory study of methods for examination of water and wastewater and
applications in control of water and wastewater treatment operations, pre-
requisite: 53:106.

53:108 Professional Engineering Ethics 3 a.h.
Professional, ethical, and social implications applied to water quality control; air
pollution control, solid wastes systems.

53:110 Environmental Engineering I: Systems 4 a.h.
Theory of physical, chemical, biological principles applied to water quality manage-
ment; lecture and laboratory; prerequisite: 53:106 or consent of instructor.

53:111 Soil and Water Conservation 3 a.h.
Lec- ture and field work; principles in design of water quality control systems; prerequisite: 53:103

53:135 Air Pollution and Solid Wastes 3 a.h.
Analysis and design of air pollution and solid waste control systems; sources and
characterization of air pollutants and solid wastes, use for control to protect total
environment.

53:136 Welding Technology 3 a.h.
Principles of welding, welding procedures and applications in field environments;
prerequisite: 53:111 or consent of instructor.

53:137 Hazardous Waste Technology 3 a.h.
Principles of design and operation of solid waste collection and disposal systems;
determination of waste characteristics, study of solid waste disposal methods, the
environmental problems, regulations and control systems; prerequisite: 53:135 or consent of instructor.

53:141 Urnology 3 a.h.
Chemical, physical, biological characteristics of sewage waste, emphasis on rela-
tionships between biological and physical properties of aquatic environment

53:142 Transportation Engineering I 3 a.h.
Location and design of routes of transportation; measurements and geometric
geometric and hydraulic factors, photogrammetry and air photo interpretation;
networks and design, property rights and acquisition.
Electrical Engineering

52:174 Transportation Engineering II 3 s.h.
Design and systems of transportation; transportation in United States; economic, regulation and finance; taxation, subsidy and policy impact; traffic studies; transit design concepts

52:175 Transportation Safety 2 or 3 s.h.
Safety aspects of various modes of transportation; emphasis on motor vehicles; safety aspects of transportation accident situations and consideration of countermeasures for prevention of accidents and reduction of accident severity

52:176 Accident Analysis 3 s.h.
Analysis of accidents; physical forces involved in accident cases; result of injuries; causes and deformations in materials and structures; principles of accident analysis

52:177 Traffic Engineering I 3 s.h.
Operation of urban and rural roads, streets and expressways, including control of traffic for safety and efficiency; elective for civil engineering seniors and graduate students

52:178 Selected Aspects of Transportation Vehicles 3 s.h.
Analysis and design of transportation vehicles with safety as primary criterion: emphasis on highway vehicles, but airplanes, trains, other transportation vehicles also considered; responsibility of vehicle to human and the adaptability of humans toward inclusion in design considerations; prerequisite of consent of instructor

52:184 Soil Mechanics 3 s.h.
Engineering properties of soils; subsoil exploration; natural soil deposits; laboratory testing; prerequisite: Engineering 31:19

52:186 Advanced Soil Mechanics 3 s.h.
Steady states and transient flow through soils; stress-strain behavior; strength theory; shear strength of soils; prerequisite: 52:184 or consent of instructor

52:188 Foundations of Structures 3 s.h.
Application of soil mechanics to foundations of buildings; bearing capacity and settlement analyses; stability of earth slopes; stress-pores and retaining walls; beam design; prerequisite: consent of instructor

52:189 Measurement of Soil Properties 3 s.h.
Advanced laboratory experiments including permeability, consolidation, triaxial shear, pore pressure and settlement measurement

52:201 Research in Transportation Engineering 1-3 s.h.
Project-sponsorship, feasibility considerations, financing methods, reports, specifications, contract administration; elective for seniors and graduate students

Courses Primarily for Graduates

52:210 Advanced Special Studies 1-3 s.h.
Special topics or investigation of selected problems by advanced students subject to approval of Department

52:220 Seminar: Civil Engineering 0 or 1 s.h.
Research in and development research in civil engineering by advanced students, subject to approval of advisor and visiting engineers

52:224 Advanced Theory of Structures 3 s.h.
Methods of analysis of beams, trusses, stability of structures, arches, cable structures

52:256 Advanced Structural Analysis by Numerical Methods 3 s.h.
Finite difference methods applied to beams, plates, frame systems, elasticity, plasticity, some structural analysis techniques and methods

52:258 Advanced Structural Integrity 3 s.h.
Stability of structures; combination of load and temperature effects; buckling analysis of columns

52:260 Research: Civil Engineering 1-3 s.h.
Experimental and analytical investigations of approved problem in civil engineering

52:265 Model Analysis and Experimental Methods 3 s.h.
Methods of design, analysis and experimental techniques for model investigation of civil engineering structures; general research techniques for experimental research in civil engineering; data, information, analysis and interpretation of data; prerequisite of consent of instructor

52:275 Advanced Structural Design 3 s.h.
Advanced design of steel, aluminum, concrete structures; structural steel design; metal design; reinforced concrete design; advanced types of materials; plate bending; failure analysis

52:277 Stability of Structural Systems 3 s.h.
Structural behavior, statics of structures, failure theory; variational methods, beams, plates, rigid frames; post buckling behavior; plate buckling; some as Mechanics and Hydraulics 30:257; prerequisite: consent of instructor

52:280 Seminar: Environmental Engineering 0 or 1 s.h.
Reports and discussion of research and recent advances in environmental engineering by students, faculty, guest lecturers

52:287 Environmental Chemistry III 3 s.h.
Lecture and laboratory dealing with advanced instrumental methods of analyzing water and wastewaters, prerequisite: 52:127

52:288 Environmental Engineering for Water Systems Laboratory 3 s.h.
Laboratory study and analysis of chemical, biological, and physical characteristics of water systems in an environmental engineering course; consent of instructor required: prerequisite: 52:104

52:289 Industrial Water-Quality Control 3 s.h.
Characteristics and water-treatment systems; water quality needs for various industrial uses and unit operations to achieve required water sources and characteristics of industrial waste and such operations applied to treatment of industrial wastes; prerequisite: 52:127, 163, 164

52:290 Applied Ultrasonics 3 s.h.
Applications of ultrasonic techniques to various sciences and engineering; wastewater quality control; systems or physical properties; prerequisite: 52:168

52:295 Environmental Engineering Systems: Special Topics 2 s.h.
Selected study of selected topics in water quality control, air pollution control, solid wastes disposal; evaluation of current research reports and advances in environmental engineering practice; may be repeated for credit; prerequisite: consent of instructor

52:297 Urban Transportation Planning 3 s.h.
Application of city-planning techniques and traffic engineering models towards solution of urban transportation problems; travel characteristics, forecasting methods, traffic generation, distribution and assignment modeling; prerequisite: consent of instructor

52:297 Transportation Systems I 3 s.h.
Design, construction, operation of urban and interregional transportation systems and terminal and exchange facilities; prerequisite: consent of instructor

52:298 Earth Pressures and Retaining Structures 3 s.h.
Earth pressures and soil stability; development of stress distributions within earth structures; stability of slabs and walls; design of retaining walls

52:310 Environmental Engineering I 3 s.h.
Environmental engineering systems; the interdependence of systems; cities, communities, industrial processes, consumer behavior; prerequisite: 52:127 or consent of instructor

52:321 Water Resource Development 3 s.h.
Interdisciplinary problems; on sociological, economic, engineering aspects of water resource development; as Mechanics and Hydraulics 72:257; prerequisite approval of Department

Electrical Engineering

Department Chairmen: Karl J. Erman
Degree offerings: B.S., M.S., Ph.D.

Undergraduate Program

The undergraduate program provides the basis for professional training in engineering, particularly that which deals with the electronics of instrumentation, communications systems, computers, and electric power generation and distribution. Electrical engineers are employed in space satellite, semiconductor, air-
craft, radio, television, computer and power industries. With the B.S. in electrical engineering, the engineer is prepared to do engineering work in design, development, manufacturing, sales, market analysis, consulting, field service and management.

To prepare the student for the electrical engineering profession, the curriculum provides a strong background in circuits, control systems, electromagnetics, 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 active and passive network synthesis, switching theory, and the design of digital systems, plasma physics, electromagneti-

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Graduate Programs

The programs leading to the Master of Science and the Doctor of Philosophy are more flexible than the undergraduate programs. Both thesis and comprehensive examination requirements vary and other may be followed by a Ph.D. program of study.

The courses in the electrical engineering curriculum have a wide application and this has resulted in interdisciplinarity in research areas such as computer simulation in biomedical problems. Graduate students are encouraged to take courses in several interdisciplinary areas. Opportunities are available for the graduate student to choose his or her own interests and participate in a creative effort. Some financial aid is available for the qualified student.

The College of Engineering's Guided Self-Study Program enables students in neighboring cities to take courses while employed full time. Research can be carried out by these students during the summer and through the independent study sessions.

Admission Requirements

The normal admission requirement of the Department is at least a 2.7 grade-point average on all courses in electrical engineering, mathematics and physics for M.S. students, 3.0 for Ph.D. students. An M.S. student with a grade-point average less than 2.7, but better than 2.3 on courses in electrical engineering, mathematics and physics, may be admitted on a probationary status. Each application is reviewed on an individual basis. Examinations may permit deviations from the normal standards.

Master of Science

Both thesis and nonthesis programs are available. The degree requires at least 30 semester hours of credit in an approved, coherent program acceptable to the advisor and the graduate committee. This must include at least 12 semester hours of coursework in electrical engineering, not including courses required for electrical engineering undergraduates, and at least nine semester hours of coursework in electrical engineering, ordinarily from mathematics and physics. With thesis, up to eight semester hours of the 30 semester hours may be research credit. Without thesis, at least three semester hours of S5:413 Independent Study are required in addition to the 12 semester hours. This Independent Study is to be a special project completed under the supervision of the student's program advisor.

The student must also pass the M.S. level in the electrical engineering graduate qualifying examination. Thesis students must also successfully complete a final examination consisting of an oral defense of the thesis.

Doctor of Philosophy

The Ph.D. degree implies a research degree. It is not awarded for successfully passing a number of courses or examinations alone, but is also based on high-quality research. Requirements other than those stated in the University's graduate manual are:

- Selection of a program advisor and filing of a tentative plan of study with the Department; done in the first year
- Qualification at the Ph.D. level in the electrical engineering graduate qualifying examination
- Successful completion of the Ph.D. comprehensive examination
- Successful completion of a research program
- Successful completion of a final oral defense of the thesis

Financial Aid

A number of fellowships, traineeships, assistantships, scholarships and industrial grants are available to graduate students who qualify. These are awarded on a competitive basis.

Special Facilities

The Department has laboratories for microcircuits, plasma physics, dynamic systems, logic and digital systems, control systems, hybrid computers and a laboratory for special projects. All students have access to remote terminals connected by telephone to the Computer Center IBM 360/65.

Staff: Professors Epley, Levy; Professors Emeriti Kurz, Manzer, Ware; Associate Professor Alton, Chayung, Hua, Levy, Loh, Longren, Malik, Robinson, Reddy

Courses Primarily for Undergraduates

S5:16 Logic and Digital Systems

3 s.h.

Introduction and fundamentals of logic of switching circuits, analysis and synthesis of combinational and sequential circuits, introduction to digital computer hardware, organization and operation, study of subsystems and device design; arranged.

S5:22 Electronic Circuits I

3 s.h.

Physical properties of solid-state electronic devices, carrier motion in semiconductors, drift, diffusion, chemical and photomultiplication, recombination, junction devices, FETs, bipolar transistors and planar/planer/linear circuit models, microstrip fundamentals; design concepts imposed by semiconductor characteristics, basic amplifiers and oscillators; theory and applications of solid-state electronics, introduction to digital computer hardware, organization and operation, study of subsystems and device design; arranged.

S5:23 Electronic Circuits II

3 s.h.

Analog circuit design based on device theory from S5:22, amplifier design, basic feedback and oscillatory theory, switching circuits and switching devices, high-frequency applications of solid-state device electronic computer system design theory and philosophy; use of modern computer techniques in analog design; prerequisites: S5:22.

S5:24 Electromagnetic Theory

3 s.h.

S5:25 Control and Communication I

3 s.h.

Analysis of signals and systems; topics covered include time and frequency domain representations of signals and systems, representation of random signals, stability of systems, scaling and digital smoothing, signal and noise, and filtering.

S5:26 Control and Communication II

3 s.h.

S5:28 Control and Communication III

3 s.h.

S5:31 Electrical Engineering Materials and Devices

3 s.h.


S5:33 Principles of E.E. Design I

3 s.h.

S5:34 Principles of E.E. Design II

3 s.h.

S5:35 Introduction to Electrical-Engineering Analysis

4 s.h.

Mathematical methods used in analysis of electrical systems, including calculus, functions of complex variables, theory of residues, special functions, and numerical analysis.

S5:36 and S5:37 Principles of E.E. Design III

3 s.h.

S5:38 Professional Seminar

3 s.h.

S5:41 Principles of E.E. Design IV

Special individual laboratory projects for advanced work; prerequisites: S5:37/38

S5:42 Topics in Electrical Engineering

1 to 3 s.h.

Special topics in electrical engineering for undergraduate only; permission of instructor.
Courses for Undergraduates and Graduates I

56:125 Principles of Communication Engineering I 3 s.h.
56:126 Principles of Communication Engineering II 3 s.h.
56:130 Topics in Electrical Engineering 1 to 3 s.h.
56:150 Electromagnetics 3 s.h.
56:160 Control Systems Analysis 3 s.h.
56:169 Advanced Electromagnetics 3 s.h.
56:181 Control Systems Synthesis 3 s.h.
56:182 Control Systems Laboratory 2 or 3 s.h.
56:185 Theory of Linear Networks I 3 s.h.
56:186 Theory of Linear Networks II 3 s.h.
56:187 Introduction to Computer Systems 3 s.h.
56:188 Introduction to Digital Systems 3 s.h.
56:189 Introduction to Networks 3 s.h.
56:189A Advanced Computer Organization 3 s.h.
56:190 Introduction to Digital Systems II 3 s.h.
56:195 Advanced Electromagnetics 3 s.h.
56:196 Advanced Electromagnetics II 3 s.h.
56:197 Digital Circuits and Systems II 3 s.h.
56:198 Digital Circuits and Systems 3 s.h.
56:199 Digital Circuits and Systems 4 s.h.
56:219 Computer Systems and Networks 3 s.h.
56:225 Advanced Electromagnetic Theory II 3 s.h.
56:226 Advanced Electromagnetic Theory I 3 s.h.
56:237 Advanced Plasma Physics 3 s.h.
56:243 Advanced Plasma Physics Lab 3 s.h.
56:250 Advanced Plasma Physics Lab 3 s.h.
56:251 Advanced Plasma Physics Lab 3 s.h.
56:252 Advanced Plasma Physics Lab 3 s.h.
56:267 Fabricated Films, Fabrics, and Finishes 3 s.h.
56:270 Advanced Digital Systems 3 s.h.
56:271 Advanced Digital Systems 3 s.h.
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56:359 Advanced Digital Systems 3 s.h.
Industrial and Management Engineering

Undergraduate Program

The general nature of industrial engineers' work is the design and implementation of productive systems involving optimal use of resources—human, material, and financial. The systems involved may range from extremely large ones to small sub-systems. In arriving today and tomorrow for the conservation and improvement of this world's environment, the importance of such systems design can hardly be overemphasized. The abilities of the industrial engineer provide, therefore, unique capability for significant contribution to the welfare of the world.

Undergraduate students become directly involved in the design of real world's systems. Recent upper-level students have completed projects for a number of organizations, including hospitals, Goodwill Industries, printing companies, banks and wholesalers, and a variety of manufacturing industries.

The undergraduate curriculum in industrial engineering requires a strong foundation in management science, mathematics, economics and sociocultural studies. Departmental electives include operations research, statistics, computer science, materials processing and physical metallurgy.

Undergraduate Curriculum

Freshman Year

- 4:1 Principles of Chemistry I
- 4:6 Elementary Chemistry Laboratory
- 8:5-6 Literature and Composition I-II
- 22M:35-36 Mathematics I-II
- 51:1-2 Introduction to Engineering I-II

Sophomore Year

- 22M:37-38 Mathematics III-IV
- 51:11-12 Dynamic Systems Analysis I-II
- 51:15 Materials Science
- 51:17 Mechanics of Solids
- 56:24 Materials Processing I
- 56:107 Engineering Management Science
- 56:128 Materials Science III
- 56:132 Sociohumanistic electives

Junior Year

- 22S:25 Probability and Statistics for Engineering and Physical Sciences
- 29:92 Physics I
- 51:6 Thermodynamics I
- 51:21-22 Principles of Design I-II
- 51:25 Electromagnetic Theory
- 56:81 Professional Seminar
- 56:132 Engineering Statistics
- 6 Technical elective
- 6 Sociohumanistic electives

Senior Year

- 56:141 Introduction to Operations Research
- 56:144 Information Systems Design
- 56:145 Design of Methods and Measurement Systems
- 6 Materials elective
- 6 Sociohumanistic electives
- 6 Technical elective
- 6 Senior core elective

Total—128
Industrial and Management Engineering

Strongly recommended preobstetric electives include:
31:11 Elementary Psychology
31:155 Human Engineering
31:156 Psychology in Management
Selected Core Courses:
59:83 Physics II
51:18 Fluids and Transfer Processes
51:19 Mechanics of Deformable Bodies or a biological science course

Graduate Programs

The purpose of the industrial and management engineering graduate programs at both M.S. and Ph.D. levels is to provide a modern, highly flexible curriculum of graduate studies. As far as feasible, each student's course of study will be based on individual background and career objective. Course selections suitable for emphasis in engineering management, human factors, operations research, applied statistics, materials and processing, or quality assurance are available.

Research carried out by graduate students is frequently of an interdisciplinary nature involving, for instance, environmental improvements, health and educational systems, and corporate planning. In addition to research for the M.S. and Ph.D. programs, students may participate in a research project by registering for an independent investigation course. Research can also be carried out during the summer sessions.

Financial support is available through a limited number of scholarships, fellowships, traineeships, loans and assistantships. Stipends vary from a tuition scholarship of $410 to a fellowship that might amount to over $15,000 for a calendar year of graduate study. Awards are based on the student's academic record, financial need and upon an assessment of the student's potential contributions to the Department's program and to the profession.

Master of Science

Students may be admitted from accredited baccalaureate curricula in any engineering discipline and the mathematical or physical sciences with a minimum grade-point average of 2.5 (A = 4) or an acceptable score on the Graduate Record Examination Aptitude Test (minimum 450 Verbal, 650 Quantitative). Students may be considered for conditional admission with a 2.3 grade-point average. Students may also be considered for admission from biological or social science programs.

The minimum M.S. program requires 30 semester hours of coursework and research. Thesis and nonthesis programs are available. Most students, however, are encouraged to obtain the master's degree with thesis. Each student's plan of study is determined individually through consultation with his or her advisor and is approved by the degree committee.

Entering students will find some background in computer programming, probability and statistics, engineering economics, human factors, and chemical engineering helpful preparation. Compensating coursework may be required for students with nonengineering backgrounds. Each program will be evaluated on an individual basis.

To be eligible for the M.S. degree the student is required to maintain a minimum grade-point average of 2.75 on a minimum of 30 semester hours of graduate work.

The nature of the final examination will be specified by the examination committee. It may comprise both written and oral parts. The examination will explore further the student's course preparation and/or the student's defense of his or her thesis or appropriate individual investigation.

Doctor of Philosophy

Students may be admitted from accredited baccalaureate curricula in any engineering discipline and the mathematical and physical sciences with a minimum grade-point average of 3.0 or an acceptable score on the Graduate Record Examination Aptitude Test (minimum 550 Verbal, 700 Quantitative). Students may also be admitted from biological or social science programs on an individual basis. A qualifying examination may be required.

Admission to degree candidacy will require a minimum grade-point average of 3.25 on relevant graduate work and the demonstration of capability for individual achievement. No foreign language is required.

Upon completion of the coursework specified by his or her committee and upon recommendation by the major adviser, the student will be admitted to the comprehensive examination. During this examination (both written and oral) the student will be examined over the advanced coursework in his or her program. Part of this examination will usually include the presentation of a dissertation proposal so that the comprehensive committee can evaluate the student's academic preparation in the light of the research to be performed.

Having satisfactorily completed this examination, the student is a full candidate for the Ph.D. and normally has only to complete and defend the dissertation.

Graduate students interested in law or transportation may participate in dual programs, which incorporate either a number of legal and industrial engineering courses or a number of courses in transportation and airframe engineering.

Laboratories of the Department of Industrial and Management Engineering include various human factors and materials processing laboratories, a systems design laboratory and a computer laboratory. Excellent supporting facilities and staff also exist in computer science, statistics, psychology and other engineering disciplines.

In cooperation with the Quad Cities Graduate Study Center, the Department offers a full extension program in Engineering Management and Industrial Engineering in the Quad Cities Area.

In addition, the Department has a guided self-study program available to students on and off campus.

Staff: professors Dorgan, Leone, Lütscheweger, Simon; associate professors Beddow, Beenhakker, Möhring, Ramberg; assistant professor Helfy

Courses Primarily for Undergraduates

58:24 Materials Processing
3 or 4 a.h.
Introductory laboratory, material by casting, welding, powder forming, non-production tools and techniques, numerical control, planning of manufacturing operations.

58:91 Professional Seminar
3 or 4 a.h.
Guest lectures, student reports and assembly, required of junior students in October, January, April.

59:82 Professional Seminar
1 a.h.
Guest lectures, student reports and assembly, required of senior students in December,
Mechanical Engineering

Undergraduate Programs

The undergraduate program in mechanical engineering prepares the student for a career in engineering with an emphasis on the technical areas of thermal energy systems and the conversion of thermal energy to mechanical and electrical energy, mechanical systems and machines, and design and control of these systems.

Mechanical engineers may become members of enterprises such as manufacturing organizations, research organizations, federal government and state agencies, and private consulting organizations. The area of work may include product design, facilities planning, plant operation, research and development, and sales. After attaining experience, the mechanical engineer may be asked to apply his or her analytical ability and technical background to broader problems, including management of resources and general planning.

The undergraduate curriculum provides a substantial number of electives in both the technical and socio-humanitarian areas. In consultation with his or her advisor, a student can plan to develop capabilities to meet individual goals within the framework of the curriculum. All upperclassmen are strongly encouraged to undertake individual projects involving either an experimental or analytical design solution to a current problem.

Undergraduate Curriculum

Freshman Year

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<th>Sequence</th>
<th>Year</th>
<th>Credit Hours</th>
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<td>41</td>
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<th>Sequence</th>
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Graduate Student Information

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<th>Course Code</th>
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<tr>
<td>51:18</td>
<td>Dynamics</td>
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<td>51:19</td>
<td>Mechanics of Deformable Bodies</td>
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Prerequisite: consent of instructor.
Mechanical Engineering

Senior Year

225.39 Probability and Statistics for Engineering and Physical Sciences 3 0 3
298.82 Physics I 0 3 3
51:21-22 Principles of Design I-II 3 3 6
51:35 Electromagnetic Theory 4 0 4
58:52 Experimental Engineering 4 0 4
58:62 Thermodynamics II 0 3 3
Socioclimatic Electives 3 3 3
Technical Electives 0 3 3
17 15 32

Graduate Program

Graduate programs leading to the Master of Science, both with and without thesis, and to the Doctor of Philosophy degrees are available to qualified students. General degree requirements are specified in the "Graduate College" section of this catalog. No explicit requirements beyond those specified by the Graduate College are imposed by the Department in keeping with the belief that the student's program can best be developed individually within the framework of the College requirements. It is felt that both the appropriateness of the student's program and his or her depth of achievement in it is adequately assured by the advisor and through a review by the examining committee. As soon as possible after admission, each student should select a Department faculty member who by mutual agreement will serve as major advisor to the student. The major advisor will assist the student in planning all aspects of his or her graduate program and usually will serve also as the research advisor.

The Department of Mechanical Engineering cooperates in interdisciplinary doctoral programs, including the Program in Applied Mathematical Sciences (see "Graduate College").

Admission Requirements

The minimum requirements for admission to a graduate program in mechanical engineering are the same as those for the Graduate College.

Although graduate students in mechanical engineering will ordinarily have a baccalaureate degree in mechanical engineering or a closely related field, students who are interested in interdisciplinary programs may be admitted, if a careful review of their qualifications and objectives finds them suitable.

Master of Science

The Master of Science degree with thesis requires a minimum of 30 semester hours of academic credit, including not more than eight semester hours of credit for thesis work. Completion of a thesis and satisfactory performance in a final oral examination are required. A Master of Science degree without thesis is also available but only to certain well-qualified students who have the approval of their faculty advisor.

Doctor of Philosophy

The Doctor of Philosophy degree is granted primarily on the basis of achievement rather than on the accumulation of semester hours of credit. However, the candidate is normally expected to have completed three academic years of residence, or two years if he or she already holds a master's degree. The candidate must pass a written and oral comprehensive examination and a final examination which is a defense of the thesis.

Financial Aid

A limited number of fellowships, traineeships, assistantships and scholarships are available to graduate students who qualify. Some are awarded on the basis of competition, others are the results of appointments.

Facilities

All undergraduates use the mechanical engineering laboratories in regular coursework, as well as in doing their individual project assignments. These laboratories are equipped with general-purpose engineering instrumentation, as well as specialized equipment for experimentation in heat transfer, compressible flow, fatigue behavior of materials, automatic control and analog computation. The College of Engineering shop is available to construct special apparatus such as may be needed for graduate theses.

Staff:
Professor Anderson, Horng, Laone, Madsen, Stephens, Trumedia; Assistant Professor Lundquist; Associate Professor Chen, Chou, Scholz, Spencer; Assistant Professor Smith

Courses Primary for Undergraduates

Mechanical Dynamics for Transfer Students

Senior in Engineering 30:14 and 30:16

4 s.h.

General principles of physical measurements, standards, calibration, estimation of errors, static and dynamic performance of measuring systems; laboratory experience involving mechanical, thermal, semiconductors, radiation phenomena; planning for experiments, including individual experiments projects.

Thermodynamics II 3 s.h.

Elements of kinetic theory and statistical mechanics; real gases; heat transfer of internal combustion engines; selected applications: sprays, fluids.

Mechanical Engineering Design I 3 s.h.

Solution of design problems; emphasis on overall design approach developed in preceding analysis of design data; design of components of the design project, selection, evaluation and modification of components; criteria for design projects; selected projects.

Thermodynamics II 3 s.h.

Conduction of 2-D, 3-D and finite element analyses of structural design projects; selection, evaluation and modification of components; selected projects.

Transformers and Related Topics 3 s.h.

Series of topics varying from basic theory to device design; evaluation of materials

Courses for Undergraduates and Graduates

58:312 Thermodynamics 3 s.h.

Series of topics covering basic thermodynamics of materials; evaluation of materials

58:101 Thermodynamics 3 s.h.

Series of topics covering basic thermodynamics of materials; evaluation of materials
Mechanics and Hydraulics

59222 Radiative Heat Transfer 3 s.h.
Thermal radiation properties, reflection, interference among surfaces separated by radiatively nonparticipating media, radiant energy transfer through absorbing, emitting, scattering media.

59225 Dynamics of Nonparaboloid Flow 3 s.h.
Effect of internal boundaries, dissociation and recombination, injection, plasma transformation on fluid flow, neutral-atom waves, shock waves, sound flow, slender body theory, singular perturbation techniques, applications of boundary layer theory and compressible aerodynamics; prerequisite: consent of instructor

59235 Compressible Flow 3 s.h.
Continuum of Navier-Stokes equations of real gases, hyperbolic flow, including approximation methods in high speed flow theory, real gas, viscous and reaction effects, turbulence in compressible phenomena.

59310 Advanced Engineering Analysis 2 to 4 s.h.
Advanced analytical topic with applications in exploitation, dynamics, vibrations, fluid mechanics, heat transfer.

59350 Sampled-Data Control System 3 s.h.
Unified treatment of digital and sampled-data control systems with examples of design and synthesis, with or without Electrical Engineering 55.242; prerequisite: 55.242

59361 Nonlinear Control Systems 3 s.h.
Takens-stable and robust control; stable linear control systems; non-linear system control; robots; reference: Electrical Engineering 55.244, prerequisite: 55.180

59362 Optimal Control Systems 3 s.h.
Sampled as well as continuous Electrical Engineering 55.244; prerequisite: consent of instructor

59363 Robust Control Systems 3 s.h.
Formulation of robustness requirements and synthesis methods for control problems; non-linear system control.

59390 Research: Mechanical Engineering 1 to 3 s.h.
Research for fulfillment of advanced degree requirements; prerequisite consent of Department chairman and faculty advisor

Mechanics and Hydraulics

Acting Department Chairmen: Kwun Hing
Degrees offered: M.S., Ph.D.

There are several areas of specialization possible in the Department. The programs accommodate those who are primarily interested in solid mechanics, fluid mechanics and hydraulics engineering, or as a combination of them. A program in water resources development combines work in hydraulic engineering and sanitary engineering and is based on courses in the Mechanics and Hydraulics Department and the Civil Engineering Department.

The Department of Mechanics and Hydraulics also cooperates in interdisciplinary doctoral programs with the Program in Applied Mathematical Sciences.

The Department is associated with the Iowa Institute of Hydraulic Research, whose laboratory is world-renowned. The major staff members of the Institute are professors in the Department and devote about half time to teaching. The Institute has unusually sophisticated instrumentation with strong emphasis on electronic observation and processing of data. The mechanics and hydraulics program has good laboratory facilities, including equipment for frequency and magnitude of load application, equipment for electronic observation, and photographic equipment, in addition to the usual testing machines.

Admission Requirements

Graduate students are expected to have an undergraduate major in mechanical or civil engineering. Those with majors in mathematics or physics generally must take some undergraduate work in the College of Engineering concurrently with their graduate program.

An applicant for the master's degree program is expected to have graduated in the upper quarter of his or her undergraduate class and to have a grade-point average above 3.50, usually 3.00 or higher. Ph.D. candidates should have had a 3.50 grade-point average in their master's degree work. Applicants must meet the general admission requirements of the Graduate College (see "Graduate College").

Master of Science

The master's degree can be secured by earning 30 semester hours of credit in an approved course of study. Approximately half of these hours are required and the other half selected by the student with the approval of his or her advisor. The M.S. thesis is optional, but when chosen it usually requires about six semester hours of credit. Candidates for the degree are expected to have a minimum grade point near 3.00 and to pass written and oral examinations.

Doctor of Philosophy

Doctoral candidates are expected to maintain a 3.5 grade-point average throughout the doctoral program. Approximately 60 semester hours beyond the master's are to be earned. About 25 semester hours are devoted to the dissertation and 15 or more semester hours to mathematics or other closely related areas, leaving approximately 20 semester hours of major courses to be taken as the dissertation.

Choice of major subjects is based on the particular line of interest the student wishes to follow. Normally, the coursework is in the same area as the dissertation.

All Ph.D. candidates are required to have one year of foreign language for its cultural value. Ability to pass the examinations for the first year of a language is accepted in lieu of actual enrollment. Furthermore, students from countries that send representatives to the United States are allowed to use English as their foreign language and to take a year or at least six hours of English at the appropriate level.

A thesis supervisor is appointed for each graduate student, with considerable attention to the student's wishes. Under Graduate College rule, the comprehensive examination must be taken by the next to the last academic period and the final examination, entirely on the dissertation, culminates the program.

Financial Aid

There is a considerable amount of support available for graduate students. In addition to federal traineeships, NDEA or NSF, graduate research assistantships are available from the Graduate College upon recommendation from the Department, and a significant portion of contract work relies on enlisting a number of graduate students as research assistants.
Courses Primarily for Undergraduates

B8.16D Analysis of Structures
2 a.
Equations of motion for static structures; impact; dynamic behavior of beams, plates, rigid frames; moving mass, blast loading; prerequisites: 38.15 or equivalent.

B8.16E Methods in Structural Analysis
4 a.
Linear and non-linear principles of single load actuation; auxiliary and minimum potential energy; kinematic and statical schemes; stress; theory of locking; prerequisites: 38.15, 70.10 or consent of instructor.

B8.16F Mechanical Methods in Continuum Mechanics II
2 a.
Continuation of 70.16I.

B8.16G Theory of Elasticty
3 a.
Constitutive laws of stress and strain; derivation of equations of elasticity; plane stress and strain problems; torsion, bending, theory of a bar; introduction to Lame equations; boundary value problems; prerequisite: 70.13 or 49.15.

B8.16H Porous-Media Hydrodynamics
2 a.
Governing equations of porous media flow and phase change of transport properties; analysis of wells, seepage, drainage, recharge, surfacic-flow problems.

B8.16 I Intermediate Dynamics
2 a.
Theoretical and applied problems; Lagrange's equations and principles of virtual work; geometry; prerequisite: 70.17, Mechanics 32M-101.

B8.16J Advanced Dynamics
2 a.
Lagrangian and Hamiltonian formulations for dynamics of discrete and continuous systems; engineering applications; prerequisite: 70.16 or consent of instructor.

B8.16K Nonlinear Mechanics I
2 a.
Analysis of problems in mechanics with geometric, material, dynamic, constitutive, and stability limitations; prerequisite: consent of instructor.

B8.16L Nonlinear Mechanics II
2 a.
Continuation of 70.16J; emphasis on problems of continuum mechanics; prerequisites: 70.15 or consent of instructor.

B8.16M Experimental Stress Analysis
2 a.
Terms analysis by means of strain measurements; mechanical, SE-4, optical strain gages, stress-color and photoelasticity; prerequisite: 70.16.

Courses for Undergraduates and Graduates

B8.16A Elementary Mathematics
2 a.
Principles of solid and field methods applied to biological systems, with special emphasis on applications to human motor activity and body processes; prerequisite: consent of instructor.

B8.16B Intermediate Mathematics of Fluids
2 a.
Flow of inviscid fluids with heat exchange; incompressible viscous flow; turbulence; boundary layer flow; flow with heat and mass transfer; surface phenomena of laboratory demonstration, same as Mechanical Engineering 8121; prerequisite: 70.11 or equivalent.

B8.16C Intermediate Mathematics of Fluids
2 a.
Dissolved gases, animal and animal stimulation; experimental techniques for fluid flows; analysis of arterial and venous flows, lesion formation and related factors; statistical methods, analysis of variance; prerequisite: 70.16.

B8.16D Hydrodynamics
2 a.
Linings of hydrodynamics; methods and classification of hydrodynamic problems, presentation and interpretation of analytical and experimental results; analysis of flow problems; prerequisite: 70.16.

B8.16E Application of Differential Equations
2 a.
Classification of differential equations of first order with respect to number of variables; solution of first-order differential equations; solution of partial differential equations; prerequisite: 70.16.

B8.16F Advanced Mathematics of Fluids
2 a.
Advanced problem solving in fluid mechanics; prerequisite: 70.16.

B8.16G Advanced Mathematics of Fluids
2 a.
Continuation of 70.16F; emphasis on problems of continuum mechanics; prerequisite: 70.15 or consent of instructor.

B8.16H Advanced Mathematics of Fluids
2 a.
Computations of 70.15. Linear algebra, boundary layers, free-surface

B8.16I Applied Mathematical Methods
2 a.
Instructor to determine if this course is appropriate for advanced engineering problems; prerequisite: 70.16.

B8.16J Advanced Mathematics of Continuous Media
2 a.
Applied methods for mathematical sciences, constitutive relations to complexes of systems; prerequisite: 70.16.

B8.16K Advanced Mathematics of Continuous Media
2 a.
Continuation of 70.16J; emphasis on problems of continuum mechanics; prerequisite: 70.15 or consent of instructor.

B8.16L Advanced Mathematics of Continuous Media
2 a.
Continuation of 70.16K; emphasis on problems of continuum mechanics; prerequisite: 70.15 or consent of instructor.

B8.16M Advanced Mathematics of Continuous Media
2 a.
Continuation of 70.16L; emphasis on problems of continuum mechanics; prerequisite: 70.15 or consent of instructor.

B8.16N Advanced Mathematics of Continuous Media
2 a.
Continuation of 70.16M; emphasis on problems of continuum mechanics; prerequisite: 70.15 or consent of instructor.

B8.16O Advanced Mathematics of Continuous Media
2 a.
Continuation of 70.16N; emphasis on problems of continuum mechanics; prerequisite: 70.15 or consent of instructor.

B8.16P Advanced Mathematics of Continuous Media
2 a.
Continuation of 70.16O; emphasis on problems of continuum mechanics; prerequisite: 70.15 or consent of instructor.

B8.16Q Advanced Mathematics of Continuous Media
2 a.
Continuation of 70.16P; emphasis on problems of continuum mechanics; prerequisite: 70.15 or consent of instructor.

B8.16R Advanced Mathematics of Continuous Media
2 a.
Continuation of 70.16Q; emphasis on problems of continuum mechanics; prerequisite: 70.15 or consent of instructor.

B8.16S Advanced Mathematics of Continuous Media
2 a.
Continuation of 70.16R; emphasis on problems of continuum mechanics; prerequisite: 70.15 or consent of instructor.

B8.16T Advanced Mathematics of Continuous Media
2 a.
Continuation of 70.16S; emphasis on problems of continuum mechanics; prerequisite: 70.15 or consent of instructor.

B8.16U Advanced Mathematics of Continuous Media
2 a.
Continuation of 70.16T; emphasis on problems of continuum mechanics; prerequisite: 70.15 or consent of instructor.
Graduate College

Administrative Staff

Dean: Dougan C. Spitzer, University of Kansas, Lawrence, Kansas 66044

Associate Deans: James J. Jakobson, Charles M. Mason

Graduate Council: Sally L. Bisby

Members of the Graduate Council: William C. Arneson (Mathematics and Statistics), Andrew E. Berghaus (Law), Thomas M. Connay (Biochemistry), Lloyd J. Ritter (Pediatrics), Albert H. Harwood (Economics), Frank J. Keeler (Mathematics), James F. McCall (Management), William R. Wicke (Physics), Wilton J. Tommasi (Art), Donald F. Redeker (Graduate Student Senate), Merrill A. Wilson (Graduate Student Senate)

The University of Iowa has been a leading center of advanced study for three-quarters of a century. Presently, one-fourth of its enrollment is in the Graduate College. This unusually high ratio reflects the breadth of the University's graduate programs and resources, the strength of a graduate faculty with a long tradition of personal and professional concern for students, and the opportunities afforded graduate students for involvement, recognition and support.

Graduate courses are offered in all colleges of the University, both professional and nonprofessional. The Graduate College provides the framework through which graduate degree programs are supervised and coordinated. The Graduate College is responsible for the review and approval of proposals for new graduate programs and for the periodic survey and evaluation of existing programs. Through its administration of scholarship, fellowship and research funds, the Graduate College encourages research and strengthening of departments. It offers extensive assistance to individual faculty members in finding the resources necessary for research projects. The Graduate College works with the departments and other colleges of the University in the formulation of policies concerning selection and in the supervision and support of graduate students.

Faculty

The graduate faculty comprises University faculty and administrative personnel in the ranks of associate, assistant and full professors. An 11-member Graduate Council, elected from and by the graduate faculty, is the executive committee of that body and is advisory to the dean of the Graduate College.

Advanced Degree Programs

The University offers graduate programs leading to the Master of Arts, Master of Science, Master of Business Administration, Master of Arts in Teaching and Master of Comparative Law degrees; the two-year degree, Master of Fine Arts, Educational Specialist and Master of Social Work; and the Doctor of Philosophy and Doctor of Musical Arts degrees.

The University offers advanced degrees in the following areas:

- Accounting — M.A.
- American Civilization — M.A., Ph.D.
- Anatomy — M.S., Ph.D.
- Anthropology — M.A., Ph.D.
- Applied Mathematics — Ph.D.
- Art — M.A., M.F.A., Ph.D.
- Astronomy — M.S.
- Biology — M.S.
- Biophysics — M.S., Ph.D.
- Biochemistry — M.S., Ph.D.
- Business Administration — M.A., M.B.A., Ph.D.
- Business Education — M.A., Ph.D.
- Chemical Engineering — M.S., Ph.D.
- Chemical Physics — M.S., Ph.D.
- Chemistry — M.S., Ph.D.
- Child Behavior and Development — M.A., Ph.D.
- Child Language and Cognitive Development — M.A., Ph.D.
- Civil Engineering — M.S., Ph.D.
- Classics — M.A., Ph.D.
- Comparative Literature — M.A., Ph.D.
- Computer Science — M.S., Ph.D.
- Cross and Bridge Professions — M.S., Cultural Anthropology and Linguistics — Ph.D.
- Dental Hygiene — M.S.
- Dental Prosthodontics — M.S.
- Drama — M.A., M.F.A., Ph.D.
- Economics — M.A., M.T., Ed.S., Ph.D.
- Electrical Engineering — M.S., Ph.D.
- English — M.A., M.F.A., Ph.D.
- Environmental Engineering — M.S., Ph.D.
- French — M.A., Ph.D.
- Geography — M.A., Ph.D.
- Geology — M.S., Ph.D.
- Gerontology — M.A., Ph.D.
- Greek — M.A.
- History — M.A., Ph.D.
- Home Economics — M.S., M.S.
- Hospital and Health Administration — M.A., Ph.D.
- Industrial and Management Engineering — M.S., Ph.D.
- Journalism — M.A.
- Latin — M.A.
- Law Enforcement and Corrections — M.A.
- Library Science — M.A.
- Linguistics — M.A.
- Meteorology — M.S., Ph.D.
- Mathematics — M.S., Ph.D.
Eligibility requirements and application procedures are set forth in "Section VII. Graduate Appointments" in "Rules and Regulations of the Graduate College."

These are the primary sources of assistance:

**Teaching and Research Assistantships**

Available in most departments; stipends range between $3,000 and $3,750 for half-time assistants; assistants also eligible for tuition scholarships; nonresident assistant (one-quarter time or more) tuition and fees reduced to resident rates

**University Teaching-Research Fellowships**

For doctoral students and first-year graduate students entering doctoral programs; typical stipends of $4,000 a year on a year-round basis, for as many as four years; recipients have teaching and research assignments, but may carry full course loads at the same time; note that one of four and all summers, recipients have full time to pursue studies, research or writing.

**Scholarships**

Up to full tuition and fees

**Graduate Fellowships**

$3,000 for the academic year

**NDEA Title IV Fellowships**

For prospective college teachers pursuing the doctorate; provides stipends of $3,400–2,800, which include summer study, plus $500 for each dependent and full tuition

**NSF Traineeships**

For students interested in social, biological or physical science; provides stipends of $2,400–2,800, which include summer study, plus $500 for each dependent and full tuition

**EPDA Part-5 Fellowships, College-Teacher Program**

Designed to prepare college or community-college instructors; provides 12-month stipend of $2,400 for the first year and $2,800 for the second year, plus full tuition and $500 annually for each qualified dependent.

The provisions are subject to change.

University and National Defense Education Act loans are available through the University’s Office of Student Financial Aids.

Many departments offer additional support through traineehips, part-time employment in research or part-time teaching appointments. The Office of the Vice-President for Educational Development and Research maintains a library of information on public and private agencies which provide funds for research and graduate study. A considerable amount of material has been collected concerning awards for overseas study.

**Graduate Student Senate**

The Graduate Student Senate is the University graduate student body’s representative organization. Representatives are elected
annually from each department of the University having a graduate degree program. The Senate's primary purpose is to serve the interests of the graduate student body in matters affecting its welfare. The senate advises the graduate dean on matters pertaining to the Graduate College.

Rules and Regulations of the Graduate College

The Academic Program

Section 1. Admission to the Graduate College

A. Application Procedure

All students seeking to register for the first time in the Graduate College of The University of Iowa must secure a formal admission statement from the Director of Admissions. Applicants may obtain the proper forms from the Director of Admissions, The University of Iowa, Iowa City, Iowa 52240.

In addition to these forms, the official transcripts from each undergraduate and graduate institution attended must be submitted to the Director of Admissions by the designated deadline prior to the session in which admission is expected. Admission applications must arrive no later than July 15 for first-semester enrollment, December 15 for second-semester enrollment or May 1 for summer-session enrollment.

B. Graduate Record Examination

All applicants prior to consideration for admission should take the Aptitude Test of the Graduate Record Examination (GRE) or, for applicants to graduate programs in business administration, the Admission Test for Graduate Study in Business (ATOSB). Applicants for whom admission data are complete, with the exception of scores on the GRE or the ATOSB, may be admitted if they meet all other requirements. The GRE, or the ATOSB, must be taken within one semester after registration. The test is given several times a year at test centers established under the direction of Educational Testing Service, Princeton, New Jersey. The judgment of acceptable levels of performance on this test and its weight in the decision on admission of a student is left to the departments. Some departments in fields where GRE Advanced Tests are available require those in addition to the Aptitude Test. Inquiries about the Aptitude Test may be directed to University Evaluation and Examination Service, and inquiries about the requirement of the Advanced Test should be addressed to the executive of the department in which the applicant is interested.

C. English for Foreign Students

Prior to consideration for admission, foreign student applicants whose native language is other than English must take and pass TOEFL (Test of English as a Foreign Language), unless they have received a degree from an accredited college or university in the United States, the United Kingdom, Canada except Que- bec), Australia, or New Zealand. The examination is given at various times of the year in many centers throughout the world. Inquiries should be addressed to the Director, TOEFL, Educational Testing Service, Princeton, New Jersey 08540.

Foreign students transferring from unfinished degree programs of other universities in the United States who have not taken this examination, or who have received a grade lower than the minimum established by the Graduate dean, must take the TOEFL examination and receive a passing grade prior to consider- ation for admission.

The Graduate College will advise the departments of those students barely passing the TOEFL test. Individual departments may require such students to take and pass a course at The University of Iowa in English usage designed especially for foreign students.

D. Early Admission

A student who is within four semester hours of having satisfied all the requirements for the bachelor's degree at The University of Iowa or any other accredited college may be given conditional admission.

E. Candidacy

Admission to the Graduate College is not the equivalent of acceptance as a candidate for an advanced degree, which must be earned through work successfully completed at The University of Iowa. (See "Section X. Master's Degrees," and "Section XII. Doctor's Degrees").

F. Declaration of Major and Degree

Every applicant for admission must indicate on the application form the department or degree program or certificate program of his or her major interest and the degree, certificate or profes- sional objective he or she intends to pursue. The only exceptions to this regulation are the limited number of applicants registered as "special students." (See definition of "special status" in next paragraph.) Changes in the major or degree status may be made in the course of a student's graduate study with the approval of the department to which the transfer is proposed. To initiate such action the student must file a change of major or degree status in the Office of Admissions.

G. Status upon Admission

All students upon admission fall into one of the following catego- ries:

1. Regular—Students who have met the minimum require- ments for admission and who have been accepted by a depart- ment, or interdepartmental degree program, for work leading to a graduate degree or certificate or stated professional goal.

2. Conditional—Students who are interested in working to- ward a graduate degree or certificate but who are required by a department to demonstrate their ability to do satisfactory graduate work before being advised to regular status. To be admitted on a conditional basis, the student must be recom- mended by a department, which will assume responsibility for advising him or her. (See minimum grade-point requirements, "Section 1. H.") The student on conditional status must achieve regular status within two sessions of registration in the Graduate College by obtaining a grade-point average of at least 2.50 and acceptance by the major department, or be dismissed.

3. Special—Students in receipt of a valid bachelor's degree
who wish to register for no more than two courses at a time and who are not planning to become candidates for a graduate degree or certificate. These students, relatively few in number, must obtain special permission to register from the Director of Admis-
sions. Special graduate students are not eligible for a graduate degree or for a certificate in a certificate program.

4. Summer Session—Students with a valid bachelor's degree and at least a 2.3 grade-point average may register only for one summer session without being accepted by a department or col-
lege. (See "Section 14" below.) The deadline for application for admission to the summer session will be determined by the direc-
tor of the summer session and the Director of Admissions. Before admission to any subsequent session, including another summer session, the student must file an application and be admitted to regular or conditional status.

II. Minimum Requirements for Admission

Graduates of any college or university accredited by regional accreditating associations may be admitted to the Graduate Col-
lege, if their academic records meet the required standards. At the master's level, a minimum grade-point average of 2.3 is
required for admission to conditional status. A minimum of 2.5 is required for admission to regular status. The grade-point aver-
age is computed only on graduate work if the student has com-
pleted at least 12 graduate hours. If the student has not completed 12 graduate hours, the grade-point average is com-
puted upon the undergraduate and graduate work completed. In cases in which a student applying for admission has a grade-
point average below the minimum required, but has a Graduate Record Examination score above a point to be designated by the
Graduate dean, his or her papers shall be forwarded to the
department concerned for examination and decision.

Students applying for admission to a doctoral program must meet a minimum GPA of 2.7 based on completed graduate work,
or the entire record of collegiate work if the student has less than
12 semester hours of graduate credit.

Departments, or committees in charge of interdepartmental
degree programs, may, and often do, set higher minimum admis-
sion requirements than those set forth above for the University as
a whole. Information concerning departmental or program
requirements must be obtained directly from the executive of the
department concerned.

For State Board of Regents' formal admission requirements, see "Appendix" of the Catalog.

Section II. Registration

A. Standard Schedule

Students registered in Graduate College may register for no
more than 15 semester hours of credit in graduate courses. In
a schedule of mixed graduate and undergraduate courses, two
hours of undergraduate credit may be substituted for one hour
of graduate credit, with registration limited to a credit total of
18 semester hours. This applies to the calculation of academic-
load only. Graduate credit is not given for courses numbered
under 100. The maximum for the eight-week summer session is
eight semester hours, or nine semester hours if two or more
semester hours of undergraduate work are included. Nine semes-
ter hours in the regular session constitutes full-time registration.
(Fellows are required to carry at least nine semester hours during
a semester as a condition of their appointments.) One-quarter-
time and one-third-time appointees are permitted to register for
the maximum 15 semester hours during a semester and eight semester hours during the eight-week summer session.

B. Courses not Included in Total Registration

In addition to a full schedule, a graduate student may register
for courses printed in the Schedule of Courses as carrying no
semester hour credit.

C. Change in Announced Credit

Graduate students may not register for more credit in any course
than that printed in the Schedule of Courses, but may register
for less credit, or no credit, by permission of the instructor. The
number of courses a graduate student may take for limited or
no credit is subject to the consent of the adviser and the approval
of the dean of the Graduate College.

D. Reduced Schedules for Teaching and Research Assistants and
Other Appointees

1. One-half-time appointees may register for not more than
12 semester hours during a semester or six semester hours during
the eight-week summer session.

2. Five-eighths-time appointees may register for not more than
10 semester hours during a semester or five semester hours dur-
ing the eight-week summer session.

3. Two-thirds- and three-quarter-time appointees may register
for not more than nine semester hours during a semester or five
semester hours during the eight-week summer session.

4. Seven-eighths-time appointees may register for not more than
seven semester hours during a semester or four semester
hours during the eight-week summer session.

5. Students appointed as teaching assistants or other faculty
instructors, may register for not more than six semester hours during a semester or three semester hours during the eight-week summer session.

E. Restriction on Credit to Faculty

Persons who hold faculty rank of assistant professor (including
associate clinical professor) or above at The University of Iowa
may earn no credit toward an advanced degree at this institution.

F. Retroactive Registration

No form of retroactive registration is permitted.

G. Registration for Part of a Semester

A graduate student may register at any time during the semester
or the summer session for not more than one semester hour of
credit for each of the remaining weeks of classes (not including
the examination period) in the term. The total registration may
not exceed the 15 semester hours permitted for a semester and
the eight semester hours permitted for a summer session. Regis-
tration after the last day of the third week of a semester or the
third day of the second week of a summer session is permitted
only in courses involving special projects, readings, individual
study, thesis or research, with the signed approval of the instruc-
tor concerned and the Graduate dean.

H. Extramural Registration
Registration for work done off campus is accepted for residence credit under the following circumstances:
1. Traveling Scholar Program of the Committee on Institu-
tional Cooperation; (see “Section III”)
2. Research at approved locations under the direction of mem-
ers of the graduate faculty at The University of Iowa;
3. Field work as part of a regularly scheduled course or re-
search program;
4. Courses taught off campus by members of the graduate faculty; (see “Section X. D” and “Section XII. C” for minimum semester hours required on campus for the master’s and doctor’s degrees);
5. Residence graduate credit from another Iowa Regents’ Uni-
versity (see “Section V. B”); and
6. As many as nine semester hours of graduate work taken at the Quad-Cities Graduate Center from faculty other than faculty of the Iowa Regents’ Universities, provided the work is acceptable by the student's major department for the specified degree.

Extramural registration does not count toward residence credit in the following circumstances:
1. Coursework transferred from another institution; and
2. Correspondence courses.

I. Extramural Fees and Privileges
Students registered for extramural courses for graduate resi-
dence credit must apply for admission to regular status (see “Section I. C”) and pay established fees. (See “Section XII. F” for special fees applicable to post-comprehensive registration, which should not be confused with extramural registration for residence credit.)

J. Correspondence Courses
Correspondence study credits do not count as residence credits. Graduate correspondence study credit earned prior to a stu-
dent’s acceptance as a degree candidate at The University of Iowa may be counted toward an advanced degree upon the approval of the appropriate college or department. Not more than nine semester hours of graduate correspondence work can be accepted for credit for an advanced degree. Such credit must be acceptable for the student’s Plan of Study and must be earned after the student has attained graduate status. A student enrolled for residence credit may not register for correspondence courses without the approval of the executive of his or her major depart-
ment and of the Graduate dean.

K. System of Course Numbers
Courses primarily for graduate students are numbered 200 or above in each department. Courses open to and carrying credit for both graduate and undergraduate students are numbered from 100 to 199. Courses below 100 are not accepted for gradu-
ate credit.

L. Auditing of Courses
In special cases, and upon the recommendation of the instructor and the adviser, the dean of the Graduate College may grant permission to graduate students to audit courses for no credit. Auditing is permitted only to a student who is currently regis-
tered.

M. Dropping of Courses
All graduate students who drop courses after the deadline date established by the dean of the Graduate Colleges for each session and published by the Registrar shall receive the grade of F unless the entire registration is canceled. This regulation may be waived only by the Graduate dean on the recommendation of the Stu-
dent Health director or the Student Counseling Service. If a student cancels registration after the deadline date, he or she must obtain permission from the dean of the Graduate College before he or she is permitted to re-register.

Section III. Traveling Scholar Program

A. Purpose
The program under the auspices of the Committee on Institu-
tional Cooperation representing 11 universities in the Midwest will enable a graduate student to take advantage of special re-
sources available on another campus but not available on his or her own campus: special course offerings, research opportunities, unique laboratories and library collections.

B. Procedure
1. A CIC Traveling Scholar first must be recommended by his or her own graduate adviser, who will approach an appropri-
ate faculty member at the possible host institution in regard to a visiting faculty position.
2. After agreement by the student’s adviser and the faculty member at the host institution, graduate deans at both institu-
tions will be fully informed by the adviser and have the power to approve or disapprove.
3. A CIC Traveling Scholar will be registered at the home university and fees will be collected and kept by that institution.
4. Credit for the work taken will be recorded at the home university.
5. Those desiring additional information should inquire at the office of the Graduate College.

C. Conditions
CIC Traveling Scholars will normally be limited to one semester or two quarters on another campus. Each university retains its full right to accept or reject any student who wishes to study under its auspices.

Section IV. Academic Standing, Probation and Dismissal

A. Master's, Specialist or Certificate Students
A student on regular status shall be placed on probation if, after completing eight semester hours of graduate work, his or her cumulative grade-point average on graduate work done at The
University of Iowa falls below 2.50. If, after completing eight more semester hours of graduate work at this University, his or her grade-point average remains below 2.50, he or she shall be denied permission to reenroll; otherwise, the student shall be restored to good standing.

B. Doctoral Students
For a doctoral student the minimum required grade-point aver-
age on graduate work at The University of Iowa is 2.70. A doctoral student whose performance falls below this level will be placed or probation. If, after completing eight more semester hours of graduate work at this university, the cumulative grade-point average remains below the required 2.70, the student shall be dropped from the program and denied permission to reenroll unless he or she applies and is accepted for another degree or certificate program. If the condition of probation is met, the student is returned to good standing.

C. Departmental Regulations
In addition to the above University-wide requirements, depart-
ments may establish higher requirements, which then determine the individual student's standing with regard to probation and dismissal. Whenever departments raise standards, the new regulations will apply only to new students and not retroactively to the disadvantage of those already in the degree program. Departments must notify the student, the Graduate dean, and the Regis-
trar of actions affecting a student's standing.

D. Restriction on Students on Probation
A student on probation shall not be permitted to take compre-
hesive or final examinations leading to any degree or certificate, nor may the student receive any graduate degree or certificate.

Section V. Credits
A. Transfer of Graduate Credit
Graduate work at other institutions will be entered on the stu-
dent's permanent record by the Registrar and a report of this action will be sent to the student, his or her major department and the dean of the Graduate College. Credit for these courses toward an advanced degree at Iowa must have the approval of the major department and the dean of the Graduate College.

B. Residence Transfer Credit
Residence graduate credit from another Iowa Regents' Univer-
sity may be counted as residence credit in this institution, pro-
vided such work is acceptable by the student's major department on the basis of the department's determination of its applicability toward the degree. (See Sections X. D. and "XII. C. for mini-
um semester hours required on campus for the master's and doctor's degrees.")

C. Reduction in Credit
For courses or seminars in independent study, thesis and re-
search an instructor may report less credit than the number of semester hours for which a student is registered.

D. Graduate Credit for Veterans
Credit may be granted for studies pursued in war and military situations under such regulations as may be formulated by the national educational agencies and under such adaptations of standing rules as the Graduate council may authorize from time to time to meet group or individual situations. The value of such credit in satisfying requirements for a degree will be determined by the major department with the approval of the dean.

E. Cancellation of Registration and Proportional Credit for Students Entering Military Service
1. Students who leave within the first six weeks of the semester receive no credit.
2. Students who leave within the period of seven to nine weeks receive one-half credit.
3. Students who leave within the period of 10 to 12 weeks receive two-thirds credit.
4. Grade reports for the one-half and two-thirds credit peri-
ods: (a) instructors report grades only as Pass or Fail; (b) credit is to be assigned on the basis of total registration minus thesis and seminar; (c) courses are to be counted toward specific degree requirements only after the student returns and then only with the department's approval.
5. Students who complete the twelfth week receive full credit.
6. Grade reports for the full credit period: (a) grades are to be reported only at the end of the semester; (b) credit is to be reported in specific courses.
7. In each instance the instructor reports the student's credit, grade and date of cancellation. No credit is granted unless the student's work is satisfactory at the time of leaving.
8. The amount of credit in thesis and research registration is to be reported to the Registrar by individual instructors on the above basis except that less or no credit may be assigned.

Section VI. Marking System
A. Marks Carrying Advanced Degree Credit
These are A, B, C and S—satisfactory.
B. Marks Carrying No Credit for Advanced Degrees
These are D—poor, F—failed, I—incomplete, W—withdrawn without credit, R—registered and U—unsatisfactory.

C. Audit
R is assigned when a student registered for no credit attends as an auditor throughout the course; if the student drops the course before the close of the term, W is assigned.

D. Incomplete
The grade of I is to be used only when a student's work during a session cannot be completed because of illness, accident or other circumstances beyond the student's control. In registra-
tions for thesis, research or independent study, the S/U grades may be applied. (See next paragraph, "E.") Students who receive the mark of I must remove that mark within the first session of registration after the closing date of the session for which it is given, or else the grade becomes F. except that students with F's
from the spring semester are exempt from completing the course during the succeeding summer session.

Specific deadlines for the submission of student work to the faculty and for the faculty’s report: on grades to the Registrar will be set by the Graduate dean for each session and printed in the academic calendar. Courses may not be repeated to remove incompletion; removal of an I is accomplished only through the completion of the specific work for which the mark is given.

E. Thesis, Research, Readings, Independent Study and Special Projects

Grades of S and U may be used for registrations in thesis, research, readings, independent study and special projects. S—satisfactory means that the student receives credit for the work; U—unsatisfactory means that he or she receives no credit. Neither S nor U is used in computing grade-point averages. At a later date, the instructor may change the S to a letter grade. In addition, departments may request the Graduate dean for permission to use grades of S and U as described above for courses which, because of their special or experimental nature, are judged to be more appropriate for such grading. In general, these requests may be granted for no more than one semester and must be reviewed by the Graduate council before being granted for longer periods. The type of grading system to be used in the above cases should always be mutually understood by the instructor and student.

F. Grades of S and U

S and U may be used for courses taken by a graduate student outside the major department or interdepartmental degree program provided that the instructor of the course and the student’s departmental adviser approve the registration. Arrangements for S/U grading in these courses are accomplished by filing a card with appropriate signatures in the Registrar’s office at the time of registration, or no later than the last day of the third week of a semester or the third day of the second week of a summer session. No changes from letter grades to S/U grades or vice versa will be allowed after these dates.

G. Computed Grade-Point Average

This is based only upon graduate work graded A, B, C, D and F. (A = 4, B = 3, C = 2, D = 1, F = 0.)

Section VII. Graduate Appointments

A. Scholarships

Scholarships are competitive and are awarded on merit. 1. Eligibility for graduate scholarships and fellowships will include: (a) registration in the Graduate College; (b) cumulative grade-point average of at least 3.0; (c) GRE score of at least 100. 2. Preference will be given to candidates for the doctoral degree. 3. Recommendations for graduate scholarships may be made to the Graduate College by the appropriate department executive, director or dean. A graduate scholarship may be awarded whether or not a student holds an assistantship. The amount of scholarship for the academic year may vary, but in no case exceed the comprehensive fee assessed. Scholarships will be credited to the student’s University account.

B. Graduate College Fellowships

Fellowships are awarded by the Graduate College upon recommendation by departments to students with outstanding academic records. Fellowships must be registered as full-time students. The primary purpose of the awards is to permit an advanced student to complete his or her dissertation or creative project and complete the degree. Other terms of the award will be established by the Graduate dean in consultation with the Graduate council.

C. Faculty Research Assistantships

Faculty research assistantships are awarded to qualified graduate students and serve two purposes: (a) to provide research service to professional members of the academic staff and (b) to provide apprenticeship experience for graduate students who are in training in research. Not more than 20 hours of service per week are required of a half-time assistant. Other part-time service is shared in proportion, and a limited academic schedule is permitted (see “Section II. D”). Appointments are ordinarily made for the nine-month academic year, but appointments may be made for other periods of time by special arrangement. Stipends vary with the qualifications of the appointee and the amount of service rendered. Faculty research assistants appointed by the Graduate College pay their own fees. Graduate appointments beginning in September are usually made by the Graduate dean upon recommendation of the various departments in March of each year, although applications may be considered at any time. Applications should be made on the form provided by the Graduate College, and should be accompanied by recommendations and/or a letter summarizing the student’s qualifications.

D. Graduate Assistantships

Graduate 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-prepared graduate students who show exceptional promise as teachers are selected for graduate assistantships. All appointments are made by the dean of the appropriate college on recommendation of the department.

E. Eligibility for Scholarships, Fellowships and Research Assistantships

Scholarship, fellowships and research assistantships in the Graduate College budget must be registered as regular students in good standing in order to hold such appointments. Appointments will be terminated when the student withdraws and/or study is terminated. In no instance may a student be promised or tendered an appointment until after approval for admission to the Graduate College by the Director of Admissions.
F. Dismissal of Assistants
A uniform policy defining procedures to be followed in the dismis-
sal of assistants has been approved by the Board of Regents.
Copies of this policy are available in the Office of the Graduate
Dean.

G. Research Associateships and Postdoctoral Fellowships
These provide for independent research. Appointment is made
by the Graduate dean upon recommendation of the department.

H. Credit
No academic credit is allowed for the teaching or research ser-
vice for which the student receives payment as a graduate or a
faculty research assistant.

I. Loans
Graduate students requiring financial assistance may apply for
loans at the Office of Student Financial Aid. See "Scholarships
and Loans" section of the Catalog.

I. Other Forms of Support
Many departments offer financial assistance in the form of
teaching, part-time employment on research programs or
externals. Requirements should be addressed directly to the
major department.

Section VIII. Advanced Programs Offered in the Graduate
College
The subject areas in which the Graduate College offers degree
programs are listed under "Advanced Degree Programs" in the
forepart of the "Graduate College" section of the Catalog.

Section IX. General Requirements for Advanced Degrees

A. Application for Degree
The student must file an application for an anticipated degree
with the Registrar not later than 10 weeks after the start of the
semester or one week after the start of the summer session in
which the degree will be conferred. The student must have the
application signed by his or her advisor. Failure to file the ap-
plication by that date will result in postponement of graduation to
a subsequent convocation.

B. Enrollment in First Semester
The student must be enrolled during the semester in which the
degree is to be conferred. Students who are away from the Uni-
versity campus during the final semester may meet this require-
ment by registering for independent study or research or thesis
according to the practice in the various departments. For doc-
tor candidate who has completed all work except the final
examination, the postcomprehensive registration described in
"Section XII. I," will suffice. For master's candidates who have
completed all work except the final examination, a registration
fee equivalent to the "postcomprehensive registration" will be
charged. Registration in a correspondence course will not satisfy
this requirement.

Section X. Master's Degrees

A. Kinds of Degrees
Master's programs requiring a minimum of 30 semester hours
lead to the Master of Arts degree, Master of Science degree,
Master of Business Administration degree, Master of Arts in
Teaching degree, and such other master's degrees as are approved
by the Graduate faculty.

B. Plan of Study
The applicant for a master's degree must file a plan of study
approved by the advisor and the departmental executive with the
Graduate College within the session in which the degree is to
be granted and by a date to be established by the Graduate dean.
The plan shall meet the requirements for the degree approved by
the Graduate faculty and set forth in the University Catalog
for each department.

C. Major and Related Fields
The plan of study should provide for reasonable concentration
in the major field of interest and, subject to the approval of the
major department, may include related subjects from other de-
partments.

D. Residence Requirement
Of the minimum of 30 semester hours required for the degree,
at least 24 semester hours must be completed in residence at this
University, of which eight semester hours on campus are re-
quired. (See "Section II. II. Extramural Registration").

E. Reduction of Old Credits
Credits for a master's degree dating back more than 10 years
from the semester in which the degree is to be conferred are not
counted toward fulfillment of degree requirements. This rule
may be waived by the dean in cases affected by military service.

F. Limit on Law, Medical, or Dental Courses
Work taken by a student in the College of Law or in basic science
courses in the Colleges of Medicine or Dentistry while enrolled
as a candidate for a professional degree may be counted on a
graduate program of study leading to a master's degree, provided
such courses were taken after the student had satisfied the re-
quirements 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 part of the plan of study by the student's advisor
and the major department. Work completed while registered for
a professional degree in the College of Law, Medicine or Den-
tistry will be counted as part of the residence requirement for
nonmedical 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 simul-
taneously or in succession requires the satisfaction of all require-
ments for each degree separately, including two theses, where the thesis is required, and two examinations, with a minimum combined total of 60 semester hours of graduate credit.

H. Master's Degree with Thesis
Not more than eight semester hours of credit for thesis prepara-
tion shall be counted in the 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 pre-
presented to the Graduate College for a check of formal charac-
teristics not later than four weeks before the convocation at
which the degree is to be conferred. (See Graduate College publi-
cation: 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 the convocation.

The thesis committee shall consist of at least three members of
the Graduate faculty and may or may not be identical with the
final examination committee. (See "K. Examining Commit-
tee.")

I. Master's Degree Without Thesis
A master's degree without thesis, consisting of at least 30 semes-
ter hours of graduate study, may be awarded upon the comple-
tion of a curriculum prescribed by a department and approved
by the Graduate Council.

J. Final Examination
The requirements for all master's degrees include a final exami-
nation, which, at the discretion of the major department, may
be written or oral or both. Such an examination will not duplic-
ate course examinations. It will be evaluated by the examining
committee as satisfactory or unsatisfactory with two unsatisfac-
tory votes making the committee report unsatisfactory. The re-
port of the final examination is due in the Graduate College not
later than 48 hours after the date of the examination or, in the
case of those departments giving a general examination rather
than a thesis examination, not later than the last day of the
graduate examination period.

If the examining committee so recommends, a candidate who
fails the examination may present himself or herself for reexami-
nation, but not sooner than the next regularly scheduled exami-
nation period in the following term (semester or summer
session).

The examination may be repeated only once.

Upon recommendation of a department, the comprehensive
examination for the Ph.D. degree may be substituted for the
master's examination.

K. Examining Committee
The examining committee for the master's degree consists of at
least three members of the Graduate faculty, appointed by the
Graduate dean upon recommendation of the major department
or program, at least two of whom are from the major depart-
ment. If the examination covers work in another department,
one member of the committee must be from that department.

Upon recommendation of the major department, the dean may
appoint additional qualified persons (not necessarily members
of the Graduate faculty) to serve as voting members of the
examining committee, and at his or her discretion the Graduate
dean may add a member to the committee.

Section XI. Two-Year Degrees

A. Master of Fine Arts Degree
This degree is awarded for creative work in the visual arts,
cinematic art, music, and literature. It is designed for students
preparing themselves professionally in such fields as painting,
design, mural decoration, sculpture, playwriting, acting, produc-
ing, stage design, musical performance, composition, instrumen-
tation, poetry, fiction and translation. Central to the program,
the thesis may consist of a novel, paintings, a play, a musical
composition or any other approved artistic accomplishment.
The program for the Master of Fine Arts requires at least two
years of residence credit in a graduate college. This requires
a minimum of 48 semester hours of graduate credit, at least 24
of which must qualify for residence credit at this University.
A Master of Arts degree may be earned while the student is work-
ing toward the Master of Fine Arts degree, but the student must
meet all requirements for each degree separately, with a mini-
mum combined total of 60 semester hours of graduate credit.

For other requirements see "Section X. B. Plan of Study";
"C. Major and Related Fields"; "D. Reduction of Old Credits";
"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 for students preparing
themselves professionally in such fields as teaching, administra-
tion, supervision and special services.

Of the minimum of 60 semester hours required for the degree,
at least 24 semester hours must be completed in residence at this
University of which 15 semester hours must be earned while the
student is on campus within one 12-month period or during two
summer sessions.

Twenty-eight of the 60 semester hours are prescribed in the
area of specialization. The others are in cognate fields, supervised
experience and electives. Four semester hours of research culmi-
nate in a written report.

Courses successfully completed 10 or more years prior to the
final examinations are evaluated by the departmental executive
in order to determine the amount of credit that shall be allowed
for such work. Evaluation of such old credits will be reported
to the Graduate College by the departmental executive at the
time of submission of the plan of study.

Other requirements and regulations applicable to the educa-
tional specialist degree are the same as prescribed for the one-
year master's degree in "Section X. B. Plan of Study"; "C. Major
and Related Fields"; "F. Limit on Law, Medical or Dental Courses";
"J. Final Examination"; and "K. Examining Commit-
tee."

A master's degree may be earned while in residence for the
educational specialist degree provided the student meets all the
requirements for the master's degree in question.
C. Master of Social Work Degree
The M.S.W. degree is conferred by the University upon those students who give evidence of knowledge and competence in the professional practice of social work by meeting the following requirements:

1. A minimum of 24 semester hours in residence at The University of Iowa;
2. A total of at least 52 semester hours in graduate social work, including a research project; and
3. A final comprehensive examination, written or oral or both, covering all work for the degree.

The curriculum is organized into four general areas: social work practice, human growth and behavior, the social services, and research. During the two-year graduate program, classroom work is combined with field experience in social agencies or social work departments. Since classroom and field practice are arranged sequentially, students can enter the School of Social Work only in September.

For other requirements, see "Section X.B. Plan of Study"; "E. Reduction of Old Credits"; "F. Limit on Law, Medical or Dental Courses"; and "K. Examining Committee."

Section XII. Doctor's Degrees

A. Character of Degree
The University awards two doctorates, the Doctor of Philosophy and the Doctor of Musical Arts. The doctorate is the highest degree awarded by the University. The Doctor of Philosophy degree indicates marked excellence in research or other creative work, and superior comprehension in the discipline. The Doctor of Musical Arts degree indicates marked excellence in performance and pedagogy.

B. Prerequisite
The candidate must present evidence of having completed a satisfactory amount of undergraduate work in the subject proposed for investigation on, in the case of deficiency, must register for prerequisite courses.

C. Residence Requirement
The doctorate is granted primarily on the basis of achievement rather than on the accumulation of semester hours of credit; however, the candidate is expected to have completed at least three years of residence in a graduate college. At least part of this residence must be spent in full-time involvement in one's discipline, at this University, beyond the first 24 semester hours of graduate work; this requirement can be met either by: (1) enrollment as a full-time student (nine semester hours minimum) in each of two semesters or (2) enrollment for a minimum of six semester hours in each of three semesters during which the student holds at least a one-third-time assistantship certified by the department as contributing to the student's doctoral program. (For purposes of record and 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 special responsibility of the student working together with his or her advisor. A formal plan of study must accompany the departmental request to the Graduate College for permission to conduct the comprehensive examination. The plan will provide a listing of all graduate courses taken which apply toward the degree, a listing of courses in progress or to be completed after the comprehensive examination, and the tools of research in which competence has been certified.

E. Reduction of Old Credits
Courses taken 10 or more years prior to the comprehensive examination will be evaluated by the major department in order to determine the amount of credit that shall be allowed for such work. Evaluation of such old credits will be reported to the Graduate College by the departmental executive at the time of submission of the plan of study.

F. Limit on Professional Courses
Work taken by a student in the College of Law or in basic science courses in the colleges of Medicine or Dentistry, while he or she is enrolled for a professional degree, may be applied to a graduate program leading to a doctoral degree if it is taken after the student has satisfied the requirements for a bachelor's degree at this University. The work accepted from the professional college must be directly related to the student's major field of study in the Graduate College, and the plan of study must be approved by the student's advisor and the major department. Work completed while registered for a professional degree in law, medicine or dentistry will not be counted as part of the one academic year which must be spent in residence as a doctoral student on the campus of this University.

G. Joint Program for Master's and Doctoral Degrees
Those students who expect to continue their training through the doctoral degree may file a joint program for the master's and doctor's degrees. The master's examination may be administered with the comprehensive examination for the doctorate for these candidates. The examining committee will file separate reports of its actions on the final examinations for the master's degree and for the comprehensive examination. Upon recommendation of the department and approval of the Graduate dean, students who are well qualified by previous training may submit a plan of study that leads directly to the doctoral degree without earning the master's degree as an intervening part.

H. Requirements in Foreign Languages
There is no Graduate College-wide requirement in foreign languages. Those departments which do require competence in one or more foreign languages establish standards as to the extent and level of competence, as well as methods of testing. Specific requirements will be found in the University Catalog under the doctoral programs of each department. Departmental executive officers are responsible for reporting completion of requirements to the Registrar for entering on the student's record.

Specifications of departmental requirements in foreign lan-
guages are filed in the Graduate College office and may be changed upon the initiative of the department.

I. Comprehensive Examination

The candidate must pass a comprehensive examination, consisting of written or oral parts or both at the discretion of the major department. Admission to the comprehensive examination is granted upon the recommendation of the major department, the filing of the plan of study, and the approval of the dean of the Graduate College. A student must be registered in the University at the time of the comprehensive examination, which must be passed not later than the session prior to the session of graduation. This examination, administered only on campus, is intended to be an inclusive evaluation of the candidate's mastery of the major and related fields of study, including the tools of research in which competence has been certified.

The comprehensive examination is not a deferred qualifying examination. It is intended to evaluate the candidate’s mastery of his or her subject at or near the end of his or her formal preparation and prior to the completion of the dissertation. The comprehensive examination and the final examination, which is concerned chiefly with defense of the thesis and related subjects, are the two principal examinations for the doctoral degree.

The comprehensive examination will be evaluated by a convened meeting of the committee and reported as satisfactory, satisfactory with reservations or unsatisfactory to the Graduate College office within 14 days after the completion of the examination. Two "unsatisfactory" votes will make the committee report unsatisfactory. The report of a satisfactory examination should contain the name of the supervising professor for the candidate's dissertation.

In the event of a report with two or more votes of "satisfactory with reservations," the exact stipulations of the committee should be recorded in the report form, if the stipulations involve further examinations 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 the date of removal of "reservations."

In case of a report of unsatisfactory in a comprehensive examination, the candidate may appeal, with the consent of the course, 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.

J. Postcomprehensive Registration

The student is required to register each semester after passing the comprehensive examination until the degree is awarded. He or she must register for the courses, research and dissertation necessary to complete the plan of study. If, after having completed all such registrations, the student is not ready to submit the dissertation and take the final examination, he or she may meet the continuing registration by paying a special minimum fee for each semester. It being understood that no registration for the summer session is required unless the student is taking a degree at the end of that session. If a student fails to register, he or she may not be admitted to candidacy until he or she has submitted an application and been approved by an advisor, the departmental executive and the Graduate dean.

K. Dissertation for the Doctoral Degree

Two copies of the dissertation must be presented at the office of the Graduate College not later than four weeks before the beginning of the session in which the degree is to be conferred and deposited therein in final form 10 days before commencement.

Regulations regarding preparation of the dissertation copy shall be promulgated by the dean of the Graduate College. Dissertations will be microfilmed and thus made available on a permanent basis. An abstract of the dissertation, not to exceed 600 words, is to be deposited with the dissertation. The abstract must be approved and signed by the dissertation adviser. The abstract is published in the Journal of Dissertation Abstracts. One copy of the dissertation typescript is bound and indexed at the University Music Library.

If the dissertation is in some nonprint form (e.g., painting, statue, performance or music) the librarian in charge of these will help the student and faculty advisor work out an appropriate method of preparing the accompanying manuscripts, if such help is needed. Once the manuscript is accepted, it is treated the same as any other.

Written dissertations shall be made available to all members of the examining committee not later than two weeks before the date of the examination.

L. Dissertation Fee

A nonrefundable dissertation fee is charged each candidate to cover the cost of the above processing of the dissertation and abstract.

M. Final Examination

The work for the degree culminates in a final oral examination administered on campus. This examination should include: 1) a critical inquiry into the purposes, methods and results of the research— not a mere recapitulation of the procedures followed; 2) intensive questioning on areas of knowledge constituting the immediate context of the investigation. The final examination may not be held until the next session after passing the comprehensive examination and must be arranged at least one month before the first check of the dissertation by the Graduate College; however, a student must take the final examination no later than five years after passing the comprehensive examination. Failure to meet this deadline will result in a reexamination of the student to determine his or her qualifications for taking the final examination. The procedures to be followed are the same as those for the comprehensive examination. (See "XII. I. Comprehensive Examination.")

Final examinations for the doctorate are open to the public. Members of the faculty of the Graduate College are especially invited to attend and, subject to the approval of the chairman, to participate in the examination.

The report of this final examination due in the Graduate office not later than 48 hours after the date of the examination. The final examination will be evaluated as satisfactory or unsatisfi-
factory. Two unsatisfactory votes will make the committee report unsatisfactory. In case of a report of unsatisfactory in the final examination, the candidate may not present himself or herself for reexamination until the next semester. The examination may be repeated only once, at the option of the major department.

N. Examining Committees

The comprehensive and final examinations are conducted by committees of no fewer than five members of the Graduate faculty appointed by the Graduate dean upon recommendation of the major department, except that departments may request the dean for permission to replace one of the five members of the Graduate faculty by a recognized scholar of professorial rank from another academic institution. A member of the Graduate faculty from outside the major department is required in those cases where a related field outside the major department is included in the comprehensive examination. For the final examination one member of the committee must be a member of the Graduate faculty from outside the major department.

Upon recommendation of the major department, the Graduate dean may appoint additional qualified persons (not necessarily members of the Graduate faculty) to serve as voting members of the examining committee, and at his or her discretion the Graduate dean may add a member to the committee.
The University of Iowa College of Law is one of 27 charter members of the Association of American Law Schools and has long been recognized and approved by the American Bar Association's Council of Legal Education and Admission to the Bar.

The degree, Juris Doctor (J.D.), is the degree normally conferred by the College.

The Curriculum
Iowa's law program is distinctive in its first-year approach. There is a freshman seminar in which small groups of students have opportunities for more individual expression, closer faculty relationships, the writing of several research papers and a closer approach to graduate-level instruction. Each first-year course has a specified function in helping students develop analytical abilities and place the legal process in its social context. All first-year students are introduced to legal research through written assignments, as well as instruction in legal method and in legal bibliography.

During the second year, all students are required to take torts and a course in appellate advocacy. Before they graduate, all must take a second course in constitutional law and a course in criminal procedure. All other second- and third-year courses are elective.

Students are encouraged to sign up for independent research with faculty members. Additionally, the College has instituted a second-year empirical research project.

Students may also take courses in other colleges of the University. To receive credit for such a course, the student must obtain prior permission of the dean of Law, and earn a grade of C or above in the course.

The Joint Program
In addition to its regular program leading to the Juris Doctor degree, the College offers a joint program leading to the J.D. degree and an advanced degree (M.A. or Ph.D.) from a participating department of the University of Iowa Graduate College.

Under this program, if a student takes a course which is relevant to both degrees, the course can perform "double duty" and be counted toward the semester-hour requirements for both degrees. In addition to reducing the time required to obtain both degrees, it is hoped the student will be able to contribute to more than one discipline the insights he or she has gained in the other.

Applications for this program must meet admission requirements of the Graduate College, in addition to those of the College of Law.

Master of Comparative Law (M.C.L.)
The degree Master of Comparative Law may be granted to selected law school graduates who complete a program of satisfactory study for two consecutive semesters and one summer session, and who submit an acceptable thesis. Applicants must meet admission requirements of the Graduate College. In addition, the admissions committee may require them to complete the Law School Admission Test.

Summer Session
A six-week summer session, offering a limited number of courses, is available to students who have completed at least one year of law school at Iowa or elsewhere. The session runs from early June to mid-July. Students may enroll for up to six semester hours of coursework. To be eligible, an applicant from another school must submit a statement from the dean of that school, indicating the applicant is in good standing and eligible to continue there.

The Independent Study Unit permits qualified graduate students or law students to use University facilities for further study following the close of the summer session. Advance permission is required by the College of Law in order to undertake an independent study project.

Related Activities
The Iowa Law Review
Published five times a year and circulated to more than 5,000 subscribers, the Review is managed and edited by College of Law students, who also write much of its material. Its editorial staff is selected from students showing exceptional ability in legal writing.

The Advocate
Written, edited and published by law students, The Advocate provides a vehicle for College of Law students to express student opinion and profiles of College faculty members and guests.

Community Legal Assistance
The College has arranged with several eastern Iowa agencies for clinical programs in which students have opportunities to relate their legal knowledge to actual problems of interviewing clients, drawing pleadings and other documents, conducting legal and other research, and, in some instances, appearing in court. Stu-
students may earn academic credit for some of these activities. Cooperating agencies include the Hawkeye Legal Services Society of Iowa City, the Cedar Rapids Legal Aid Society; students are also involved in house corpus and civil projects at the Men's Refundary in Another, a labor project at Fort Madison State Penitentiary, an Iowa Civil Liberties Union referral project, programs in several county prosecuting offices and in the office of the United States Attorney, a program with the Iowa state police, and a law office which the College of Law has established in a disadvantaged area of Davenport, Iowa.

Student Organizations
Law student organizations at Iowa include the Order of the Coif, a national honorary whose membership is drawn from the top 10 percent of the senior class; the Iowa Society of International and Comparative Law, Phi Delta Phi and Phi Alpha Delta, national law fraternities; Kappa Beta Phi, national law society; and the Black American Law Students Association. All students are members of the Iowa Student Bar Association, whose functions include placing students as voting members on faculty committees.

Facilities
The Law Building contains a library and air-conditioned class-rooms. With its collection of approximately 190,000 bound volumes, the law library is an outstanding research facility. A broad open-space policy makes it readily available to students. Agricultural Law Center, created by the State Board of Educa-
tion, is nationally and internationally reputed. It conducts legal-economic research with Iowa State University and the United States Department of Agriculture.

fees and Expenses
In addition to regular tuition and fees, books and supplies aver-
age about $200 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 encourages their taking outside employment. It has developed a comprehensive financial aid program which enables most stu-
dents to meet expenses without outside employment. In addition to the awards listed in the "Scholarships and Loans" section of the Guide, the College offers research assistantships with substi-
tutional stipends. Assistantships are awarded to high-ranking third-year students who have demonstrated ability for research and scholarship. About one-third of the student body have scholar-
ships.

Placement
A wide variety of placement opportunities is available upon graduation from the College of Law. These include opportunities to work in government, as clerks to judges, with corporations and in private practice, both in the very large law firms in the great urban areas of our country and in small firms throughout the country. There are many law opportunities to practice law in Iowa, and in recent years approximately half of the graduating

law students have availed themselves of these opportunities. Each year numerous law firms, corporations and government agencies visit the University to recruit students from the College of Law.

Admission
Prosoft Studies
No prescribed program of undergraduate study is required for admission to the College of Law at Iowa. The student should pursue a program adapted to his or her own intellectual interests. However, the objectives of the program should include increased capacity for verbal comprehension and expression, increased understanding of human institutions and values, and increased facility of thought.

Admission Requirements
Beginning students may enter the College of Law only in the fall semester.

Except for good cause shown, a student must apply for admis-
sion by May 1 preceding the fall semester in which he or she wish-
to enter. The applicant is responsible for seeing to it that, before the final date for submitting applications, each college or university he or she has attended has sent an official transcript to the University, or, if the student has registered with it, has tr
she should request information forwarded from the Law School Data Assembly Service, Princeton, New Jersey.

An application fee of $10.00 must accompany applications from those who have not completed their undergraduate work in residence at The University of Iowa.

The applicant must present a baccalaureate degree from an approved college or university prior to commencing work in the College of Law.

To be considered for admission, the applicant should have attained a cumulative grade-point average of at least 3.0; on all college work undertaken (N = 6).

Each applicant for admission must complete the Law School Admission Test administered by the Educational Testing Serv-
ices, Princeton, New Jersey, and have his or her score forwarded to the College of Law. Except upon a showing acceptable to it, the admission committee will not consider applications from students who fail to take the test by April of the year they intend to enroll.

fulfillment of the specific requirements for admission listed above does not assure admission to the College of Law. From the applicants meeting the minimum requirements, the admiss-
ion committee will select those who appear to be best qualified for the study and practice of law. The admis-
sion committee may require personal interviews of applicants. The College participates in the University's Educational Op-
opportunities Program and considers applicants from disadvan-
taged backgrounds on an individual basis.

Advanced Standing
A transfer student may be eligible for admission if he or she has attended a school which is a member of the Association of American Law Schools, and is in good standing at the time of withdraw-
ed (evidenced by a letter from the dean of the school from
Graduation Honors
The J.D. degree may be granted with special honors as follows:
With Highest Distinction—cumulative weighted average of 85 or more; With High Distinction—cumulative weighted average of 80-84; With Distinction—cumulative weighted average of 75-79.
eration Committee foreign law librarian Suss

Clearance
82/04 Civil Procedure I 3 s.h.

82/16 Civil Procedure II 3 s.h.

82/19 Civil Procedure II 3 s.h.

82/30 Civil Procedure II 3 s.h.

83/02 Criminal Law 3 s.h.

83/03 Criminal Law 3 s.h.

83/04 Criminal Law 3 s.h.

83/05 Property I 3 s.h.

83/06 Property I 3 s.h.

83/07 Property I 3 s.h.

83/08 Property I 3 s.h.

83/09 Property I 3 s.h.

83/10 Property I 3 s.h.

83/11 Property I 3 s.h.

83/12 Property I 3 s.h.

83/13 Property I 3 s.h.

83/14 Property I 3 s.h.

83/15 Property I 3 s.h.

83/16 Property I 3 s.h.

83/17 Property I 3 s.h.

83/18 Property I 3 s.h.

83/19 Property I 3 s.h.

83/20 Property I 3 s.h.

83/21 Property I 3 s.h.

83/22 Property I 3 s.h.

83/23 Property I 3 s.h.

83/24 Property I 3 s.h.

83/25 Property I 3 s.h.

83/26 Property I 3 s.h.

83/27 Property I 3 s.h.

83/28 Property I 3 s.h.

83/29 Property I 3 s.h.

83/30 Property I 3 s.h.

84/01 Business Organization 3 s.h.

84/02 Business Organization 3 s.h.

84/03 Business Organization 3 s.h.

84/04 Business Organization 3 s.h.

84/05 Business Organization 3 s.h.

84/06 Business Organization 3 s.h.

84/07 Business Organization 3 s.h.

84/08 Business Organization 3 s.h.

84/09 Business Organization 3 s.h.

84/10 Business Organization 3 s.h.

84/11 Business Organization 3 s.h.

84/12 Business Organization 3 s.h.

84/13 Business Organization 3 s.h.

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84/22 Business Organization 3 s.h.

84/23 Business Organization 3 s.h.

84/24 Business Organization 3 s.h.

84/25 Business Organization 3 s.h.

84/26 Business Organization 3 s.h.

84/27 Business Organization 3 s.h.

84/28 Business Organization 3 s.h.

84/29 Business Organization 3 s.h.

84/30 Business Organization 3 s.h.

85/01 Natural Resource Law 3 s.h.

85/02 Natural Resource Law 3 s.h.

85/03 Natural Resource Law 3 s.h.

85/04 Natural Resource Law 3 s.h.

85/05 Natural Resource Law 3 s.h.

85/06 Natural Resource Law 3 s.h.

85/07 Natural Resource Law 3 s.h.

85/08 Natural Resource Law 3 s.h.

85/09 Natural Resource Law 3 s.h.

85/10 Natural Resource Law 3 s.h.

85/11 Natural Resource Law 3 s.h.

85/12 Natural Resource Law 3 s.h.

85/13 Natural Resource Law 3 s.h.

85/14 Natural Resource Law 3 s.h.

85/15 Natural Resource Law 3 s.h.

85/16 Natural Resource Law 3 s.h.

85/17 Natural Resource Law 3 s.h.

85/18 Natural Resource Law 3 s.h.

85/19 Natural Resource Law 3 s.h.

85/20 Natural Resource Law 3 s.h.
21662 Poverty and the Law Seminar

Urban redevelopment control, 8asure of democracy in planning process; housing programs designed to meet needs of ghetto

21664 Student Rights Seminar

Selected legal problems arising within contemporary university; emphasis on student rights, including such topics as academic due process and free speech

21668 Taxation: Corporate Acquisition: Seminar

21667 Income tax consequences which flow from various kinds of ownership transfers, including statutory mergers, asset acquisitions and stock acquisitions; prerequisite: 91272 or 91274 Federal Taxation
The University of Iowa is the only institution in Iowa offering the degree Doctor of Medicine. Its College of Medicine, which marked its centennial year in 1970, was one of the first university-based centers of medical education established in the Midwest. It has earned international recognition for its pioneering contributions to medical science and for its general excellence.

The College of Medicine is accredited by the American Medical Association and the Association of American Medical Colleges. The College meets the requirements of all state licensing boards; its diploma admits the holder to all privileges granted to graduates of all medical colleges before such boards.

Because the College is both physically and administratively an integral part of a major university, its students have opportunities to pursue a full range of academic and cultural interests. At the same time, the College contributes significantly to the strength of the University; for example, more than 1,500 nonmedical students enroll each semester in basic sciences courses administered by the College of Medicine.

The M.D. Program

The Doctor of Medicine program which the College introduced in the fall of 1969 differs in several significant ways from the traditional format of medical education. Its two-year introductory phase comprises three semesters of basic medical science and one semester of preclinical orientation in clinical medicine. The third year comprises a summer session and two semesters of clinical clerkships, in which the student participates in patient care under supervision of staff physicians. The fourth year is devoted to an Intensive Study Program in which the student focuses on whatever facet of medical education best relates to his or her professional interests.

Combined M.D.-Graduate Programs

students who want to pursue the M.D. degree in combination with M.S., M.S. or Ph.D. program may do so by gaining admission both to the College of Medicine and to the Graduate College, and making detailed arrangements with the graduate department/chairman and the associate dean for Medical Student Affairs of the College of Medicine.

Graduate Programs

Programs leading to graduate degrees through the Doctor of Philosophy are offered in anatomy, biochemistry, microbiology, nutrition, pharmacology (including toxicology), physiology and biophysics, preventive medicine and environmental health science, and in radiation biology. In addition, graduate degree programs leading to the Master of Science degree are offered in ophthalmology, orthopedic surgery, otolaryngology, pathology, psychiatry and surgery.

Faculty

All members of the medical faculty have full-time appointments; their work in practice and research is part of, not apart from, their work in teaching. Many have earned national and international honors and are listed in Who's Who American Men in Medicine or American Men of Science.

Facilities

The College of Medicine is housed in the UI of 1 Health Center, which also includes the colleges of Dentistry, Nursing and Pharmacy. An $85-million expansion program begun in 1969 will make this one of the most advanced, comprehensive health science centers in the United States. Its present and projected facilities include:

General Hospital

The 810-bed General Hospital provides facilities for teaching all major medical specialties and for full programs of internship training and residency in all major specialties. More than 30,000 inpatients are admitted, and more than 110,000 outpatients are seen annually.

Children's Hospital

Children's Hospital houses orthopedic surgery, physical medicine, pediatrics, dermatology, a rehabilitation center, and the University's physical therapy training unit. It has a 165-bed capacity.

Psychopathic Hospital

With clinical and research laboratories in neurophysiology, biochemistry and psychology, Psychopathic Hospital has facilities for complete study of patients. It has 60 beds for adults and 35 beds for children. Four hundred inpatients are admitted annually, and more than 7,000 outpatients are seen. The electronencephalographic laboratories serve the entire Health Center.

Hospital School

The Hospital School for Severely Handicapped Children provides educational opportunities for 60 physically-handicapped and educable mentally-retarded children on both a residential
and a day-school basis. Its interdisciplinary program involves professional personnel from medicine, psychology and educational psychology, social work, nursing and therapy in activities which provide patient care with research and professional training.

The Oakdale Campus

The 52S-acre Oakdale campus is located seven miles northwest of the Health Center. Its 385-bed hospital houses the state tuberculosis treatment center, an alcoholism treatment unit, medical technology training laboratories and classrooms, and toxicology laboratories. Also on the Oakdale campus are pediatrics research laboratories, the offices and laboratories of the Institute of Agricultural Medicine's accident prevention section and Health Center research animal-care facilities. A Model Clinic for Family Practice was opened in 1972 to serve the rural community adjacent to the campus and to provide a teaching base for the Department of Family Practice.

The Veterans Administration Hospital

The 440-bed Iowa City Veterans Administration Hospital is an integral part of the Health Center. Interns, residents and medical students may receive much of their clinical training here. Several of the major facilities of the Health Center are based in the VA Hospital, including laboratories for the transplantation program, highly-specialized laboratories in nuclear medicine and special units for the study of metabolic and gastrointestinal diseases. The VA Hospital also offers unique training opportunities in the fields of clinical pharmacology, gastroenterology, cardiology, nephrology and applied immunology.

The Health Sciences Library

Scheduled for 1973 completion, the new Health Sciences Library Building will permit consolidation of the basic collections of the University's health-science colleges. Architecturally innovative, the new building will include a 24-hour study area and group-study areas. Now numbering approximately 65,000 volumes, the College of Medicine collection covers all branches of medical science. In addition the College subscribes to more than 1,200 periodicals.

Other Facilities

The new Basic Sciences Building houses five departments of the College of Medicine. Other teaching facilities are located in the Dental Research Center and in the Medical Laboratories Building, which also houses the State Hygiene Laboratory.

Admission

Applications are accepted beginning July 1 of the year preceding the beginning of the class for which application is being made. Prospective students are urged to apply as early as possible. The closing date is December 15.

A fee of $10.00 accompanies applications from those who have not completed work in residence at The University of Iowa. This fee is not refundable except to residents of Iowa who are denied admission.

Eligibility of the specific requirements for admission does not assure admission to the College of Medicine. From the applicants meeting the requirements, the admissions committee of the College of Medicine will select those who appear to be best qualified for the study and practice of medicine.

Each applicant must file with the Office of Admissions the completed application form and an official transcript from each college he has attended.

Applicants who have completed the baccalaureate degree and required courses five or more years before seeking admission to the College of Medicine will be considered by the admissions committee only under exceptional circumstances.

The applicant must have completed at least three years (96 semester hours) of college study, including the following specific courses or subject areas with appropriate laboratory:

- **Physics:** a complete introductory course;
- **Mathematics:** college algebra and trigonometry; or advanced college mathematics, if the student completed college algebra and trigonometry in high school;
- **Chemistry:** as a minimum, a complete introductory course in organic chemistry, which would ordinarily follow a complete introductory course in general modern chemical principles; and
- **Biological sciences:** a complete introductory course in the principles of animal biology, or zoology and botany (but not botany alone), and one introductory course in biology.

To be considered for admission, an applicant must have attained a grade-point average of at least 3.3 (A = 4) for all college work undertaken. Because the quality of work in premedical science is basic to success in medicine, special attention will be given to the admissions committee to grades in science. Where the college offers an option to take courses on a pass/fail basis it is expected that applicants will take the required science courses on a graded basis.

Preference will be given to applicants with high scholastic standing who are residents of Iowa, but consideration will also be given to outstanding nonresidents. Applicants for admission are required to take the Medical College Admissions Test administered by the American Association of American Medical Colleges. Applicants are requested to complete this test in May or October of the year preceding that for which they are applying for admission. Students may make arrangements to apply for this examination through the University's Evaluation and Examination Services.

Personal interviews will be arranged as desired by the admissions committee.

Accepted applicants must make a $50.00 deposit within two weeks after notification of favorable action on the application. This deposit will not be refunded but is credited toward the first fee payment.

Applicants accepted for admission are required to submit a satisfactory physical examination report to the University Student Health Service within two weeks after notification of acceptance. Applicants must also complete, through Student Health Service, an X-ray film of the chest and successful vaccination against smallpox prior to registration.

Admission to Advanced Standing

Applicants who have completed at least six years of college study may be eligible for advanced standing, provided they meet the admission requirements for students entering
at this school; has satisfactorily completed courses qualifying him or her for advanced standing; has achieved high scholastic standing; and submits a statement from the dean of the school from which he or she is transferring, showing work done at that school.

Unqualified Students
Applicants for admission to the College of Medicine who are not degree candidates but want to register for special subjects will be admitted to any lecture or laboratory course only upon complying with all the regular requirements for admission to such a course, or by action of the faculty upon recommendation of the professor in charge of the course.

Academic Advancement
Promotions committees appointed by the dean and consisting of designated members of the faculty under whom the courses have been taken will, at the close of the academic year, review the accomplishments of the students and determine their eligibility for advancement. In making their decisions the committees will consider the attendance of the student as evidenced by the grade received in each subject which should reflect the consensus of the Departmental Staff, his or her seriousness of purpose, his or her conduct and general fitness for entering the medical profession.

Graduation Requirements
The Doctor of Medicine degree candidate's time of study must include attendance during at least four years of instruction. At least one year must be taken at The University of Iowa. A passing grade in each of the branches of the curriculum must have been attained, and all other requirements of the College satisfied.

Financial Aid
The College of Medicine currently awards approximately $141,000 in full resident tuition scholarships to approximately 175 students each year. These scholarships are usually distributed equally among the four College classes. Most are awarded on the basis of need, although, in accord with the donors wishes, some are awarded on the basis of merit. These scholarships vary in value from $500 to $1,500.

Annual summer research fellowships are awarded on the recommendation of the sponsoring faculty members.

Loans are available to medical students on the basis of their need, and to the extent that loan funds are available. Most of these loans come from the United States Public Health Service's Health Professions Student Loan Program, as do most of the need-based scholarships. Smaller and shorter-term loans are usually available through the office of the College of Medicine.

The College is fully committed to the Educational Opportunity Program, both academically and in terms of financial aid.

Nondepartmental Courses

B5:197 Genetics for Medical Students
1 s.h.
Course course for medical students, normally taken during second semester; review of general genetics (usually independent) and progress study and classification of genetic and congenital malformations as seen in clinical medicine.

B5:198 Histology and Scientific Methods (Senior Level)
3 s.h.
Individualized, programmed review of basic histology; emphasis on analytical concepts required in critically appraising medical literature; topics include descriptive statistics, probability, populations and sampling, interpretation of statistical significance tests, regression and correlation, presentation and discussion with clinical faculty cover basic principles and example of epidemiology and clinical trials.

B6:110 Neuroanatomy and Behavior
3 s.h.
Full-senor course devoted to correlating and integrating basic science core of information with clinical experiences of junior and senior years. Includes important information and development of skills in history-taking, physical diagnosis, laboratory diagnosis and related material which will prepare student for related clinical challenges.

B6:161 Designing Learning Programs for Health-Careers Education
3 s.h.
Emphasis placed on development and evaluation of educational programs, specific planning procedures and typical methods and evaluation applications geared toward establishment of working relationships with ongoing educational programs; activities individualized to meet various backgrounds, needs and objectives, same as Education 76:161.

B6:162 Learning Strategies for Health-Careers Education
3 s.h.
Role of health specialist as teacher examined; variety of learning strategies explored through discussions, observations, micro-experiences and experiences within social learning environment; activities individualized to meet various backgrounds and needs, same as Education 76:162.

B6:252 Facilitating Learning in Health-Careers Education
3 s.h.
Role of health-care educator as tutor and learning facilitator explored in detail; student experiences wide variety of learning strategies through readings, discussions, observations, micro-experiences and actual classroom activities; prerequisite: Education 76:162.

B6:275 Health-Careers Education and the Health-Service Industry
3 s.h.
Comprehensive overview of health service industry, particularly as related to both initial preparation and continuing education of health-care personnel.

Anatomy

Intern Coordinating Committees Chairman: R. E. Heitl Degrees offered: B.A. (M.S.U. only) to students with primary orientation in physical health science.

The Ph.D. in anatomy is awarded on recognition of original work done in experimental biology, usually with an emphasis on structure-function relationships and often with a more immediate applicability to human biology than is the case of similar work in zoology.

Candidates will be required to have proficiency in the three basic anatomical areas—gross anatomy, microscopic anatomy, neuroanatomy. Usually they will also take courses in such related fields as physiology, biochemistry and endocrinology.

The courses listed under such titles as "Advanced Human Anatomy," "Problems," and "Research" involve semi-independent, in-depth work on selected topics, including the methodology of teaching anatomy.

Special Faculty Strength
Members of the Departmental faculty possess expertise in areas such as hematology, endocrinology, neurology, biology of cancer and calcified tissues, electron microscopy. The faculty has done innovative work and shows special interest in modern techniques used in the teaching of various aspects of anatomy.
Admission

Work leading to an advanced degree in anatomy in the Graduate College may be taken by properly qualified students. For admission procedures, see "Graduate College." Staff: professors Halley, Kaelber, Metcalf, Napolitano; associate professors Karlsson, Mollot, Scarch; assistant professors Aydlett, Brault, Etir, Farnes, Parsons, Robinson, Sears, Yarnell; assistants in instruction Metcalf, Fidler.

Courses

401 Elementary Human Anatomy 4 a.h.
Primarily for students of nursing and dental hygiene.
402 Microanatomy for Dental-Hygiene Students 3 or 4 a.h.
Cells, primary tissues and organs, emphasis on microscopical aspects; includes cytochemistry.
407 Human Gross Anatomy for Dental Students 6 a.h.
Regional dissections of entire body with major emphasis on head and neck, includes neuroanatomy, open to graduate students with consent of instructor.
408 Microanatomy for Dental Students 8 a.h.
Cells, primary tissue and organs, emphasis on microscopical aspects; includes neuroanatomy, open to graduate students with consent of instructor.
409 Gross Human Anatomy for Medical Students 7 a.h.
Regional dissections of entire body in lecture and conference; for graduate students only, prerequisite consent of instructor; first semester.
409 1st Microanatomy for Medical Students 4 a.h.
Cells, fundamental tissues and microscopic study of organ systems; for medical students, first and second semester pre requisite: for graduate students consent of instructor, first semester.
410 Neurology and Behavior 5 a.h.
Introductory study of cell biology, organization and function of central nervous system, behavior, neurophysiology, anatomy and development; required of graduate students in anatomy; open only to graduate students required for either graduate or undergraduate students; taken as 93/35, 73/107 and 73/110.
416 Special Microanatomy or cr, ar.
Studies of microscopic structure of organs; prerequisites: biology, including histology or equivalent and consent of Department head.
418 Human Anatomy 4 or 5 a.h.
Conferences and laboratory study of human anatomy; emphasis on gross importance in physical therapy; registration required.
610/611 Human Anatomy and Neuroanatomy 2 or 3 a.h.
Coreq. 612, which is a prerequisite.
818/815 Human Development 3 a.h.
Lectures and demonstrations including the experimental basis for understanding neurology.
902/903 Human Anatomy 4 or 5 a.h.
Open to graduate students with suitable background; prerequisite consent of Department head.
93/100 Intro to Basic Endocrinology 2 a.h.
Diseases of endocrine organs; open to graduate, undergraduate and medical students; prerequisites: 40/103, 410/412, Physiology: 72/213, histology: major course or equivalent plus 610/611.
93/205 Teaching Workshop in Anatomy 2 a.h.
Practical application of educational psychology to teaching of anatomy; formulation of course objectives, teaching methodology, test construction and evaluation, final grades.
93/206 Problems or cr. ar.
Prerequisites of 40/101, 610/611.
93/207 The Vasculature Nervous System or cr. ar.
Autonomic nervous system as component of nervous system, function of peripheral nervous system with emphasis on the endocrine and cardiovascular systems; coreq. 72/208.
93/216 Endocrinology for Medical Students 1 a.h.
Basic text is 72/216, plus 72/211 open to graduate students; core course in endocrinology given in first half of second semester (eight weeks)

Anesthesia

60/218 Electron Microscopy—Theory and Technique 6 cr. ar.
Lectures and laboratory course offered each fall semester for no more than 10 students, prerequisite consent of instructor.
60/221 Microscopic Anatomy for Graduate Students 5 a.h.
Light microscopy and gross anatomy of cells, tissues and organs, taught some semesters.
60/223 Cytochemistry Seminar 3 a.h.
Lectures, conferences and discussion of the structure and structural-functional correlations of cells as revealed by data on microscopical; prerequisite: general course in microscopic anatomy (60/218) desirable but not essential prerequisite; open to graduate students; taught 1973 and only years thereafter.

Anesthesiology

Department Head: Jack Meyers

For nearly 60 years medical students at The University of Iowa have received clinical instruction in the administration of anesthesia and other related activities of the Department. Moreover, it is probable that the country's first residency-training program in anesthesiology was established at Iowa in 1922. The program is approved by the American Board of Anesthesiology and has graduated well over 200 specialists. About 20 percent of these former residents are in academic medicine, and 16 have served as heads of academic departments of anesthesiology.

The teaching, service and research activities of the Department have traditionally had, as their background, the administration of anesthetic agents for the relief of pain during the thousands of surgical procedures performed every year in the University Hospitals. During the last 20 years or so, however, activities outside the operating room have received increasing emphasis. Among them are diagnostic and therapeutic procedures for relief of severe and intractable pain; consultations involving problems of sedation, airway management and cardio-pulmonary supports; and substantial participation in the activities of the Recovery Room and Intensive Care Unit.

Undergraduate and graduate students in the specialty: help to develop in the junior student some concepts and technical skills that relate to anesthesia; airway management is the core of the clinical patient; and offers the senior student those intense study in any and all phases of the Department. Wide clinical experiences, well-designed seminars and teaching conferences, and ongoing research activities develop in the postgraduate student, or resident, the intellectual depth and skills required of a specialist in anesthesia.

Staff: professors Boush, Meyers, associate professors DelBalso, Dobbashi, assistant professors Baxiorn, Gage, Ghanem, Honick, Kocman, Ugilis; crirmical assistant professor Thaxter.

Courses

116/216 Clinical Anesthesiology for Junior Students 7 a.h.
Introduction to general aspects of anesthesiology; establishment of patient-airway and evaluation of cardiovascular system; participation in regional and local anesthesia, in appropriate.
116/218 Clinical Anesthesiology 4 to 5 a.h.
Introduction and practical experience in various forms of anesthesia for surgical procedures; student learns basic techniques of general, spinal, epidural and peripheral nerve block techniques; instruction in mechanical and complex aspects of anesthesia, management of patient morbidity and complications of anesthesia, patient monitoring and pharmacology of anesthetic agents; core course in general and regional anesthesia, respiratory and cardiovascular function and various methods of immobility; in
cluded are clinical anesthesia seminar, basic science seminar, and morbidity and mortality conferences; four students; subscription time: four to eight weeks; offered all year.

11601 Intensive Care Students interested in evaluation of treatment of critically ill patients in Intensive Care Unit; artificial ventilation, evaluation of pulmonary function and monitoring of pharmacologic and metabolic states included; particular stress applied to postan- draftly operated patients and those needing prolonged ventilatory assistance; fluid balance and acid-base problems thoroughly emphasized; two students; subscription time: four or eight weeks; offered all year; prerequisite: four hours 11611 Clinical Anesthesia Seminar 1 to 5 a.h.

15611 Clinical-Anesthesia Seminar 1 to 5 a.h.

One-hour evening seminar discussing various problems encountered in clinical anesthesia; correlations made between clinical anesthesia and disease entity; 10 students; subscription time: 16 or 32 weeks; offered September to June.

11621 Mortality and Morbidity Conference 1 to 5 a.h.

Two-hour group discussion of recent problems in clinical anesthesiology; particular stress applied to improved patient care in intensive units; 10 students; subscription time: 16 or 32 weeks; offered all year.

11622 Anesthesia Research: Respiratory Function 4 to 8 a.h.

Participation in research on effects of agents and situations which alter neural and autonomic function; laboratory studies stressed; one student; subscription time: four to eight weeks; offered September to June; prerequisite consent of instructor.

11623 Anesthesia Research: Neurosurgical Pharmacology 4 to 8 a.h.

Participation in research on drug effects on neurosurgical conduction and action potential generation utilizing microelectrode techniques; one student; subscription time: four to eight weeks; offered September to June; prerequisite consent of instructor.

11624 Anesthesia Research: Central Nervous System 4 to 8 a.h.

Participation in research of effects on cerebral electrical activity of human, canine, and rabbit; techniques; one student; subscription time: four to eight weeks; offered September to June; prerequisite consent of instructor.

11625 Research: Well-defined project relating to anesthesia; one student; subscription time: two to eight weeks; offered September to June; prerequisite consent of instructor.

Biochemistry
Department Head: Carl S. Vestling Degrees offered: B.S., M.S., Ph.D.

For a description of the undergraduate programs, see "College of Liberal Arts".

Graduate Programs
Both the M.S. and Ph.D. degrees are offered. Financial support is available to all students who qualify and are selected for the Ph.D. program. Minimum entrance requirements include an undergraduate grade-point average of 2.9 (A = 4.0) with 3.0 average in science courses and a score of 1250 on the combined verbal and quantitative parts of the Graduate Record Examination. Aptitude Test. In addition, there are prerequisites of college-level courses in mathematics through calculus, physics, biology and physical chemistry.

All graduate students take 99.255 Biochemistry (a survey) and 99.281 Research Techniques in their first semester, and 99.261 and 99.282 Seminar in the second semester. After consultation with the staff, the new student is assigned to a research laboratory for 99.261. Ordinarily, no more than two students are assigned to the same laboratory. An advisory committee consisting of the 99.261 instructor and two other faculty members helps the new student plan his or her course of study and evaluates his or her progress periodically during the first two years.

Current research interests include several aspects of physical biochemistry, effects of configuration on conformation and chemical and biochemical reactivity of the carbohydrates, hor- ronad secretory mechanism, structure and function of nucleo- hileic acid, gene control in higher organisms, biochemistry of glycopolypeptides and carbohydrate-protein complexes, mechanisms and control of protein synthesis. Biochemistry of proteins. characterization of liver and hepatoma enzymes. clinical bio- chemistry, neurobiochemistry, lipid metabolism, therapeutic mechanisms, conformational and allosteric information of glycolytic enzymes. Analysis of enzyme systems utilizing cobra- cing and 5'-nucleotidase, enzyme mechanisms, biosynthesis of all the active and biochemical changes during development.

In addition to fulfilling the general degree requirements outlined in the "Graduate College" section of this catalog, a candi- date will assist in the teaching of biochemistry during two or three semesters as part of his or her graduate training.


Courses
110.0 Biochemistry 3 a.h.

110.1 Biochemistry Seminar two-hour lecture course for courses majors focusing on molecular dynamics of biological systems and mechanisms and to maintain these core requirements. 99.130 The Chemistry of Biological Materials 3 a.h.

110.5 Molecular properties of biological systems; molecular and macromolecular thermodynamics; DNA and RNA; proteins and polysaccharides. 99.135 Molecular Biology and Biochemistry 3 a.h.

110.5 Physical Biochemistry 4 a.h.

110.5 Physical Biochemistry 4 a.h.

Theory and interpretation of physical chemical measurements which relate to biochemical systems. Topics include thermodynamics, heat capacity, multiphasic systems, and protein and enzyme reactions. 99.130 Biochemistry 3 a.h.

110.6 Physical Biochemistry 4 a.h.

This course is designed to acquaint the student with the physical chemical measurements that are used to determine the conformation and characterization of components of biochemical systems. 99.130 Biochemistry 3 a.h.

110.6 Physical Biochemistry 4 a.h.

110.8 Physical Biochemical Techniques 4 a.h.

110.8 Physical Biochemical Techniques 4 a.h.

110.9 Biochemistry 4 a.h.

This course includes laboratory work in physical biochemistry. The course includes laboratory work in physical biochemistry. 99.130 Biochemistry 3 a.h.

110.9 Biochemistry 4 a.h.

110.10 Physical Biochemistry 4 a.h.

110.10 Physical Biochemistry 4 a.h.
Human Nutrition

professinals and the physicians in providing comprehensive family-oriented care. The program is intentionally flexible to allow each resident freedom to tailor his or her training to individual patient needs and includes a broad exposure to internal medicine, pediatrics, obstetrics and gynecology, psychiatry, medical and surgical subspecialties and community medicine.

Two major elements of training are utilized—the Family Practice Model Office and hospital-based clinical experience. The Family Practice Model Office is located on the Oakland campus and is designed to imitate as closely as possible private physicians' offices in the community. Here each resident develops a model office practice and sees patients by appointment. He or she is responsible for the continuing care of patients who select him or her as their family physician, and the student maintains total responsibility for the care of these patients throughout the three years of training. Within the unit, the student learns the principles of practice management by participating in the organizational and administrative decisions required to manage a private office.

The hospital-based clinical experience is a unique combination of exposure to practice in the University Hospitals in Iowa City and Mercy Hospital in Mason City. Rotations are specifically designed to provide a breadth of experience in more than one setting.

Staff: professors Rakel; associate professor Bryen; clinical assistant professors Martin, Moeusner, Parker, Wistner.

Courses

Senior Electives

116/101 Family Practice Clerkship: Broadlawns Polk County Hospital, Des Moines 4 to 8 a.h.

Four- to eight-week course, available all year, involving assignment to clinical services of Internal Medicine, Pediatrics, Obstetrics and Gynecology, and Surgery; experience individualized where possible; supervision by family practice residents and physicians in charge of service.

116/102 Emergency Room: Broadlawns Polk County Hospital, Des Moines 4 a.h.

Four-week course, available all year, involving participation in care of patients seen in emergency room and operating clinic. Student follows hospital patient intake and emergency service and continues to participate in his or her own patients in transition to inpatient care when possible; supervision by family practice residents and physicians.

116/103 Ambulatory Health: Des Moines 4 a.h.

Student participates in management of acute and rehabilitation phases of ambulatory care of patients under care of a family practice group. Emphasis is placed on early recognition and treatment of illness and rehabilitation of the patient in the community. Department of Psychiatry will participate in psychological assessment when indicated. Four-week course; available all year.

116/104 Preceptorship in Family Practice

Preceptorships available with selected family physicians in Iowa representing variety of rural and urban practices, both solo practitioners and those practicing in varying group sizes. Five- to eight-week course available all year.

116/105 Family Practice Clerkship: Cedar Rapids 4 to 8 a.h.

Post- to eight-week course, available all year, involves exposure to clinical services of Internal Medicine, Pediatrics, Psychiatry, Obstetrics and Gynecology, and Surgery; experience individualized as much as possible.

116/106 Emergency Room: Cedar Rapids 4 a.h.

Assignment to emergency room of either St. Luke's or Mercy Hospital under supervision of family practice resident on call and staff physician experience includes care of all patients seeking to emergency room and participation in care transferred from ER to floor; six-week course; available all year.

116/107 Community Hospital Clerkship 4 a.h.

Attachment in community medicine and breadth of exposure, family physician has with local hospital and community; student works at any of several community hospitals in Iowa under supervision of staff family physicians and participates in hospital care of all patients on all services; four- to six-week course available all year; 8 a.h.

Teaching maximum utilization and effective coordination of all hospital services; teaching family medical services; training in medical management of common and severe medical problems; further development of clinical evaluation of patients, all under supervision of staff family physicians; additional exposure to emergency room; preparation for their skills and manner in which they treat patient care; four- to six-week course; available all year.

116/108 Independent Study 2 a.h.

Student works with approval of Department in investigation of subject of his or her choice in area of family medicine, community medicine, medical care delivery, health evaluation or similar areas; available all year, with subscription time of two months which may be extended to four weeks for four semester hours of credit.

116/109 Independent Study 2 a.h.

Same as 116; involves one-half day per week, extended over a 20-week period, available all year.

116/111 Family Practice: Mason City 4 a.h.

Rotation on variety of services in Mercy Hospital, or with family physicians, selected by student to represent skills and breadth of experience required for the provision of comprehensive medical care; supervised by teaching staff at Mercy Hospital; four-week course; available all year; may be repeated.

116/116 Special Study Family Practice 2 a.h.

For students wishing to arrange special clerkships, which may include foreign electives, with prior approval from Department; completed Summer of Individually-arranged Elective (here available in dean's office) must be submitted 45 days prior to beginning of rotation; allow minimum of 30 days in complete form, subscription time and other details to be arranged.

Genetics

See "College of Liberal Arts"

Hospital and Health Administration

See "College of Liberal Arts"

Human Nutrition

Administrator: Thomas A. Anderson

Health Services Admin Building

Degrees offered: M.S., Ph.D. (qualified for American Dietetic Association membership also offered through internship program)

The program in human nutrition is administered by a College of Medicine-Graduate College advisory committee. Lecturers, thesis advisors and seminar participants are selected from the faculties of the College of Medicine, Education, Business Administration and Engineering, and the Department of Home Economics.

The Dietetic Internship

The Dietetic Internship program prepares the student for American Dietetic Association membership, establishes a base for study toward the M.S. or Ph.D. degrees and encourages cultural interests.

Applicants must meet requirements of the American Dietetic Association, 620 North Michigan Ave., Chicago 60611, and the U of I Graduate College.

The intern earns a minimum of 12 semester hours of graduate credit in nutrition seminar, clinical nutrition and hospital dietary administration. Opportunities are readily available for the pursuit of individual interests in clinical, metabolic and administrative research and study. University Hospitals pay intern a stipend which partially covers educational expenses.
The Master of Science Degree

There are opportunities for the M.S. graduate in teaching at the junior college level and above; in hospital, school and company food service administration; in public health; in clinical and hospital-patient service; in clinical research; and in consulting.

The M.S. requires at least 30 semester hours of planned graduate credit (including thesis) and satisfactory performance on oral and written examinations.

The student’s course of study depends on his background and interests. These may include biochemistry, physiology, microbiology, public health, child welfare, psychology, education, marketing, computer science, statistics, labor and personnel management, and food science.

The Master of Science student may choose to emphasize with a thesis or in-depth study one of these areas of professional practice:

**Clinical Dietetics**

The student develops and practices skills necessary for the nutritional care of patients and clients. He or she practices as a member of a team of health professionals. Specific skills include recognition of individual differences in patients’ nutritional needs and methods of meeting those needs; effective communication; and acceptance and/or delegation of authority and responsibility. Learning experiences occur primarily in the hospital setting. Time is also spent determining and providing nutritional needs to well infants, pregnant women, the aged and groups seen in a clinical setting.

**Dietetic Administration**

The student develops and practices skills necessary for direction and supervision of a large group feeding operation which meets the consumers’ nutritional needs. Skills include application of problem-solving techniques in personnel and plant management, and food production and service. The hospital is the “laboratory,” but nonhospital facilities are also observed.

**Nutrition Education**

Practice is provided in teaching patients, colleagues, physicians, medical students, personnel and special interest groups. Innovative teaching methods are encouraged. The emphasis is on the development of behavioral objectives as a basis for content and evaluation.

**Nutrition Research**

Metabolic and/or physiologic processes are investigated. At the M.S. level, the research is usually part of a larger study conducted by a senior investigator. The student has a variety of choices of topics and advisors.

**Supplemental Activities**

Students are encouraged to attend medical grand rounds, pediatrie grand rounds and special lectures and conferences.

Supplemental opportunities are provided by affiliated agencies, such as the Iowa State Department of Health, Iowa Hospital Schools, Head Start Program, Iowa Diabetic Association and Iowa Model Rural Health Center.

Special programs

Independent study (projects) are available to out-of-Department students. Biannual, one-day conferences are held to present the latest findings in nutrition—“Diet Therapy, U.S.A.”

**The Doctor of Philosophy in Human Nutrition**

The graduate program leading to the Ph.D. degree may be undertaken by students who have completed the master’s degree or who will combine the Ph.D. program with the M.D. or D.D.S. requirements. The exceptional student may be allowed to complete work for the Ph.D. and bypass the master’s degree. The program usually requires three years to complete and is designed to prepare the student for careers primarily in research and teaching. It is directed by the Nutrition Advisory Committee of the Graduate College.

Prerequisites include mathematics through calculus, physics, organic chemistry, analytical chemistry, physical chemistry, biochemistry and physiology. Courses in foods and microbiology are highly desirable. Each student must select a particular specialty wherein he or she can concentrate studies and research. Areas of research may include both animal and human nutrition in healthy or sick adults and children, with emphasis on metabolic processes. The individual field of specialization may or may not include any of a wide variety of subjects, including epidemiology, ecology, food chemistry, metabolic errors, etc.

During the first year or two, a doctoral student may take a number of lecture courses and seminars, after which he or she qualifies for candidacy for the doctoral degree. Research is usually begun early in the program.

The actual program of instruction includes courses in nutrition, coursework in other areas to support the research problem and future professional goals, research—usually in a laboratory—and research tools. The degree candidate will have opportunities to assist in the teaching of students as part of his or her overall experience.

Advisory Committee: professor Bean, Connor (Internal Medicine); Filer, Rud (Pediatrics); Dryer (Biochemistry); Osborn, Osman (Home Economics); Lawerton (Preventive Medicine), Mason (Surgery); associate professor Anderson (Pediatrics), Crowley, Hubel (Internal Medicine), Ross (Pathology), Bryan (Family Practice), Seignin (Biochemistry and Pediatrics); assistant professor, Internal Medicine; Spector (Biochemistry), Healy (Pediatrics); instructor Burmeister (Preventive Medicine)

**Courses**

65-061 Nutrition Seminar 1 a.h.
Preparation of current research findings in nutrition, therapeutic and administrative areas.

65-062 Nutrition Seminar 1 a.h.

65-065 Clinical Nutrition 2 to 4 a.h.
Nutritional aspects of disease and illness, emphasizing therapeutic use of food; presented by medical and allied staff: lectures, demonstrations, bed-side rounds, conferences and chats.

65-066 Experimental Nutrition 2 to 4 a.h.

Consideration of MRMC, but may be taken as an independent unit

65-068 Project in Research or 2 a.h.

Advisory: therapeutic, epidemicologie; food science, metabolic studies; introduction to research

65-069 Projects in Nutrition or 2 a.h.
Internal Medicine

The Department of Internal Medicine is concerned with the diagnosis, prevention, and treatment of diseases of adults. Members of the Department with special interests are organized in divisions: allergy-免疫ology, cardiology, clinical pharmacology, and oncology; gastroenterology, hepatology, infectious diseases, renal and hypersensitivity disease, and rheumatology.

Undergraduate Program

Members of the Department bear a major share of the teaching of second-year students in the course "Introduction to Clinical Medicine" in which students begin to learn the pathophysiology, signs, symptoms, complications, prevention and treatment of disease. The foundation for this is sought to obtain histories, to perform physical examinations and to plan a rational approach to diagnosis and treatment.

In the third year, students are assigned for nine weeks to medical services at University and Veterans hospitals, under the guidance of the house staff and Department members, and actively participate as members of the ward team in diagnosis and treatment.

In the fourth year, students may select a clinical experience to fit their own plans from among 47 courses offered by general medicine and the specialties.

Graduate Program

The Department offers straight and mixed internships and an approved residency program of high quality. In addition, most specialty divisions offer clinical and research fellowships for periods of one to two years. These permit the development of special knowledge and skills relevant to the specialty. Candidates for internship are accepted from approved medical schools. Post- doctoral fellows who have obtained their Ph.D.s are also accepted for programs in which the major focus is laboratory research.

Facilities

Teaching occurs on the medical services and in the laboratories of the University hospitals in Iowa City, and at the Veterans Administration hospitals in Iowa City and Des Moines.


Courses

79213 Clinical Medicine for Junior Medical Students 8 h
79213 General Medicine Diagnostic Clinic 3 h or 4 h
Assignment for first days of a general diagnostic clinic; clinical evaluation of medical problem; emphasis on diagnosis and management of common medical problems presented to intern in practice, as well as on aspects of management of office practice, panemistry of patients and communication in medicine. Health care, six students, subscription time two to four weeks, offered all year
79223 Medicine-Consultation Services 2 h
Emphasis on development of ability to analyze and recommend specific therapy for hospitalized and ambulatory patients while using consultation as an instrument; two students, subscription time two weeks, offered all year
79222 Clinical Allergy-Immunology 2 h or 4 h
Experience in diagnosis and treatment of patients with allergic and immunologic disease; emphasis on allergic rhinitis and asthma; consultation: typical cases are seen from clinics with whom the student works; consultation: 8-10 appropriate cases required for registration
79221 Cardiology University Hospitals 2 h or 3 h
Development of synthesis and depth in diagnostic and therapeutic problems encountered in clinical cardiology. Participation in evaluation and care of patients seen in Cardiology and Internist Care Units, consultation and correlation of diagnostic and therapeutic questions associated with cardiovascular disease. Development of critical and objective evaluation of test results, data and pre- postoperative conditions. Consultation is offered to patients during their stay on the ward, two students, subscription time four weeks, offered all year
79211 Clinical Cardiology VA Hospital 4 h
Emphasis, as in 79221, on breadth in diagnostic and therapeutic problems encountered in clinical cardiology. Consultation and correlation of diagnostic and therapeutic questions associated with cardiovascular disease. Development of critical and objective evaluation of test results, data and pre- postoperative conditions. Consultation is offered to patients during their stay on the ward, two students, subscription time four weeks, offered all year
79223 Diagnostic Cardiac Catheterization Laboratories 2 h or 4 h
Working up patients admitted for cardiac catheterization; personal involvement in use of evaluative techniques in evaluation cardiovascular dynamics and in
Neurobiology

61:172 Laboratory Methods in Cellular Immunology 4 sh.
One-hour lecture and six hours of laboratory per week. Concentration-level course in cellular immunology designed to acquaint graduate students, clinical residents and senior medical students with current research methods and techniques used for investigating these theories, emphasis placed on role of lymphocytes in both humoral and cellular (immune) mediated reactions; prerequisite: 61:141, 61:158 or 61:159 or consent of instructor.
61:173 Seminar 3 sh.
Seminar meets once weekly for three hours; physical, chemical and mathematical aspects of antigen-antibody reactions, structure and function of antibodies, related topics; recommended prerequisite: 61:141, Biochemistry 99:120 and Chemistry 4:122 or 99:135.
61:174 Seminar 3 sh.
Seminar meets once weekly for three hours; structural and functional aspects of immunology, methods of testing for immunity, allergy and hyperimmunity, immunopathology; same as 61:317; prerequisite: 61:158 or 61:159 or 61:167 or consent of instructor.
61:180 Microbiological Ecology 3 sh.
Lecture and laboratory work on basic mechanisms for transmission and expression of genetic information; prerequisites: 61:158, 199:119, 199:120, 199:130 or consent of instructor.

Neurobiology Committee Chair: L. Van Orden

Neurobiology is an interdepartmental program comprising these courses:

50:110 Neurobiology and Behavior 5 sh.
Same as 61:107, 71:207, 72:110
60:207 The Visceral Nervous System 3 sh.
cr. arr.
60:208 Review of Anatomical Neurology 3 sh.
cr. arr.
99:203 Neurochemistry 3 sh.
72:281 Advanced Neurophysiology (Muscle) 3 sh.
cr. arr.
72:282 Advanced Neurophysiology (Sensory) 3 sh.
cr. arr.
72:283 Biophysics of Excitable Membranes 3 sh.
72:284 Advanced Neurophysiology (Sensory) 3 sh.
cr. arr.
31:125 Brain Function and Learning 3 sh.
31:137 Sensory Processes 3 sh.
31:227 Introduction to Physiological Psychology 3 sh.
31:228 Neuroendocrinology and Behavior 3 sh.
31:229 Neural Mechanisms and Learning 3 sh.
31:230 Biochemistry and Behavior 3 sh.
31:271 Psychonanotics 3 sh.
Same as 3:254
31:272 Psychoneurosis Laboratory 2 sh.
31:320 Behavioral Pharmacology 2 sh.
31:321 Seminar: Chemical Influences on Behavior 2 sh.
31:335 Seminar: Brain Mechanisms and Behavior 2 sh.
31:337 Seminar: Neurophysiology 2 sh.
31:342 Seminar: History of Neurophysiology 2 sh.
3:256 Physiology of Hearing 4 sh.
37:124 Comparative Physiology 4 sh.

procedures and current concepts of immunology; freshmen year; second semester; prerequisites for students not enrolled in College of Medicine; first semester medi- cine or equivalent.
61:172 Laboratory Methods in Cellular Immunology 4 sh.
One-hour lecture and six hours of laboratory per week; concentration-level course in cellular immunology designed to acquaint graduate students, clinical residents and senior medical students with current research methods and techniques used for investigating these theories, emphasis placed on role of lymphocytes in both humoral and cellular (immune) mediated reactions; prerequisite: 61:141, 61:158 or 61:159 or consent of instructor.
61:173 Seminar 3 sh.
Seminar meets once weekly for three hours; physical, chemical and mathematical aspects of antigen-antibody reactions, structure and function of antibodies, related topics; recommended prerequisite: 61:141, Biochemistry 99:120 and Chemistry 4:122 or 99:135.
61:174 Seminar 3 sh.
Seminar meets once weekly for three hours; structural and functional aspects of immunology, methods of testing for immunity, allergy and hyperimmunity, immunopathology; same as 61:317; prerequisite: 61:158 or 61:159 or 61:167 or consent of instructor.
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72:281 Advanced Neurophysiology (Muscle) 3 sh.
cr. arr.
72:282 Advanced Neurophysiology (Sensory) 3 sh.
cr. arr.
72:283 Biophysics of Excitable Membranes 3 sh.
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31:227 Introduction to Physiological Psychology 3 sh.
31:228 Neuroendocrinology and Behavior 3 sh.
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Same as 3:254
31:272 Psychoneurosis Laboratory 2 sh.
31:320 Behavioral Pharmacology 2 sh.
31:321 Seminar: Chemical Influences on Behavior 2 sh.
31:335 Seminar: Brain Mechanisms and Behavior 2 sh.
31:337 Seminar: Neurophysiology 2 sh.
31:342 Seminar: History of Neurophysiology 2 sh.
3:256 Physiology of Hearing 4 sh.
37:124 Comparative Physiology 4 sh.

Neurology

Neurology is a segment of medical science concentrating on organic disorders of the brain, spinal cord and peripheral nervous system, their diagnosis and management. Medical student teaching and postgraduate training in this field carefully integrated with patient care, has long been a significant function of the Department.

Dr. Sahn is a past president of both the American Neurological Association and the American Academy of Neurology, is one of the authors of a leading textbook in the field and sees the pace for a Department whose greatest strength is clinical management of patients with neurological disease.

The Department is the Central Registry for the International Cooperative Anencephaly Project, funded by the National Institute of Child Health and Human Development, and collaborates with the Department of Ophthalmology in sponsoring the Neurosensory Center, which is supported by the National Institute of Neurological Diseases and Stroke. The Neurosensory Center is concerned with research in pathophysiology of the nervous system and the eye.

Members of the Department also contribute regularly to the neurologic literature.

The Department offers clinical and research training to junior and senior medical students, contributing to the Doctor of Medicine degree. In addition, an active three-year residency program in all facets of the neurological sciences is pursued, leading to board certification in neurology for such trainees. In conjunction with the Department of Psychology, the Department of Neurology also offers appropriate clinical training contributing to the degree of Doctor of Philosophy in Psychology.

The activities of the Department include clinical training in neurology, electroencephalography and, in conjunction with other departments, pediatric neurology, psychology, electromyography and neuropathology. A well-equipped neurochemistry laboratory is available for research and clinical studies in epilepsy, and, in cooperation with the Department of Physiology and Biophysics, the Department operates an active muscle physiology laboratory.

Staff: professors Sahn, Van Allen, associate professors Flacham, assistant professors Schaffer, Nabben. Joint Appointments: professor McCormick (Neurochemistry), Beaton (Psychology-Neurology), Knott (Electrophysiology). Associate professors Biet (Pediatrics-Neurology), associate professors Doe (Psychology-Neurology), Lorkovic (Neurology-Physiology), Stuhl (chief of Neurology Service, Iowa City VA Hospital); research associate Schonits (Neurology-Physiology).

Courses

4643 Lectures to Nurses 2 a.h.
4645 Lectures to Occupational Therapists 2 a.h.
4654 Advanced Basic Neurology 2 a.h.
4687 Neurology-Neurosurgical Conference 2 a.h.
4688 Principles of Neurology 2 a.h.
4692 The Apheresis Disorders 2 a.h.
4722 Analysis of Neurophysiologic Testing 2 a.h.
4732 Clinical Neuropsychology 3 a.h.
4733 Fundamentals of Behavioral Neuroscience 3 a.h.
4742 Advanced Clinical Neurology 3 a.h.
4743 Clinical Neuropsychology 3 a.h.
4744 Research Projects in Clinical Neurology 5 a.h.
4745 Neurology Seminar 1 a.h.
Obstetrics and Gynecology

64395 Behavioral and Language Disorders 8 a.m.

Supervised study of types of behavioral impairment and aphasic disorders shown by patients with various disease; their significance for identifying process, course and locus of central lesions; one student; course period: two months; offered all year.

64396 Neurosurgery 4 a.m.

Supervised study of the anatomy and functional neurosurgery; special emphasis on brain preparation and use of state-of-the-art computerized study material on neurosurgical anatomy provided by computer; for students with prior surgical experience; offered all year.

64397 Pediatric Neurology 4 a.m.

Supervised study and participatory ward service in addition to observation of diagnostic and treatment of various surgical procedures performed on patients with pediatric neurology; student works closely with attending neurologist and neurosurgeon, including multi-disciplinary conference; one student; course period: four weeks; offered Spring and Fall.

64398 General Neurosurgery 4 a.m.

Supervised study and participatory ward service in addition to observation of diagnostic and treatment of various surgical procedures performed on patients with pediatric neurology; student works closely with attending neurologist and neurosurgeon, including multi-disciplinary conference; one student; course period: four weeks; offered Spring and Fall.

64399 Obstetrics and Gynecology 4 a.m.

Supervised study of the anatomy and functional neurosurgery; special emphasis on brain preparation and use of state-of-the-art computerized study material on neurosurgical anatomy provided by computer; for students with prior surgical experience; offered all year.

Nuclear Medical Technology

See "Colleges of Liberal Arts"

Obstetrics and Gynecology

Department Head: W. C. Welleth

The Undergraduate Program

The courses in obstetrics and gynecology are designed to provide a comprehensive survey of female reproductive problems. This is done through a series of didactic lectures, laboratory and outpatient assignments, ward rounds, teaching seminars and special elective courses.

The course on the care of normal labor (6604) gives the student a core of information he or she will need to be prepared to care for women no matter what his or her career choice.

In the senior year a variety of electives is available, depending on the student's skills in obstetrics and gynecology in a private hospital setting or in a multiphased clinic. These electives include rotations at Badlands Park County Hospital, Des Moines; McFarland Clinic; Ames; Medical Association, Davenport; Methodist Hospital, Davenport; Methodist Hospital, Des Moines; and Tid Gunderson Clinic, La Crosse, Wisconsin.

Graduate Education

The Department offers a three-year residency. Graduates are eligible, after passing a written and oral examination, to be certified as specialists by the American Board of Obstetrics and Gynecology.

During the three years, the residents rotate through the various divisions of the Department and care for hospital inpatients and outpatients. Additional training is obtained in preclinical clinics in Obstetrics, Cedar Rapids and Davenport. During the senior year, the resident spends time at Methodist and Broadlawns hospitals in Des Moines. In the third-year rotation, the resident is trained in normal and abnormal obstetrics, advanced gynecologic surgery, office gynecology, endocrinology, oncology, family planning and endoscopic procedures. Advanced specialty training after the completion of the residency is available in endocrinology and oncology.

Staff: professors Bradford, Geppert, Reitzel, Prine, White, VanMeter, associate professors Westlund, Hughes, Kretzschmar, Van Orden, associate professors de Froze, Galask

Courses

6404 Clinical Obstetrics and Gynecology for Juniors 2 a.m.

Clinical training designed to provide opportunity for each student to become proficient in basic history taking and physical examination of the gynecologic and uro-gynecologic patient as well as concepts of diagnostic techniques and therapy; special emphasis on gynecologic cancer; free admission in reproductive gynecology and psychological aspects of disease of women also stressed; concepts of practice of normal labor delivery and selected gynecologic complications provided.

6409 Advanced Obstetrics Clerkship Iowa City 4 a.m.

Students work in Labor-Delivery Unit, perform duties primarily assigned to interns, in addition of normal and abnormal labors; ample opportunity for experience with variety of technical procedures (forceps delivery, breech, cesarean section, tube-abortation, etc.), some of which may be performed by student; three students; subscription lists four weeks; offered all year.

6410 Advanced Obstetrics Clerkship Des Moines 4 a.m.

Essentially same as 6409; note and board physician-in-training is student's responsibility; no students; subscription lists four weeks; offered all year.

6495 High-Risk Obstetrical 4 a.m.

6411 Clinical Gynecological Endocrinology Laboratory Methods 2 a.m.

Clinical Gynecological Endocrinology Laboratory Methods; patient followed when admitted and student participation in diagnostic and therapeutic procedures; for students entering the eighth week of this elective, opportunity to gain experience in methods of final and maternal monitoring in labor; two students; subscription lists four to eight weeks; offered all year.

6412 Faculty Practicum 2 a.m.

6413 Advanced Gynecologic Clerkship 4 a.m.

Work on gynecologic ward; performance of technical lab duties; responsibility for pre- and postoperative evaluations and management; scrutiny of variety of gynecologic operative procedures; some of which student performs; one student; subscription lists four weeks; offered all year.

6415 Gynecologic Oncology 2 a.m.

Learning, in essence of caring for patients with gynecologic malignancies, what constitutes adjuvant therapeutic procedures, including selection of primary sites; opportunity to observe histologic and cytologic findings; treatment of each aspect of patient's care, including preoperative evaluation, treatment and postoperative care; student is given an opportunity to participate actively in radical pelvic surgery, radiation therapy and chemotherapy; using patient in oncology phase, student becomes aware of importance of long-term follow-up and is alerted to complications resulting from initial treatment, as well as recurrence of disease, development, by daily contact with patient, of understanding of unique physical and psychological problems of patients with malignancy; one student; subscription lists four weeks; offered all year.

6416 Public Health Aspects of Obstetrics and Gynecology 2 a.m.

Experiences with community medicine emphasized to provide familiarity with physical examination and patient management and understanding of appropriate health care in programs such as home visits by public health nurses; knowledge of preventive medicine and maternal and child hygiene gained through patient contact and participation in seminars; two students; subscription lists two weeks; offered all year.

6417 Family Planning 2 a.m.

Participation in care of three-week evening family planning clinic; direct involvement in provision of services to patients; consists of attendance of six adult citizens student may select one per week for six weeks; two per week for two weeks and three per week for two weeks; one student; subscription lists four weeks; offered all year.

6418 Gynecologic Endocrine Clerkship 2 a.m.

Student follows an endocrinologist; responsibility for initial evaluation of patients in Gynecologic Endocrinology Clerkship; in consultation with staff, follows patients with diagnostic and therapeutic programs for patients; opportunity to become familiar with internal procedures used in endocrinology-clinical nutrition (endocrinology-clinical nutrition); patient care; patients admitted to hospital followed and examined in medical or surgical management; diagnostic instruments introduced; through reading and participation in seminars; three students; subscription lists four weeks; offered all year.

6419 Gynecologic Endocrinology Research 12 or 14 a.m.

Work in Department research laboratories, usually on specific projects of interest to student in the area of reproductive endocrinology; staff co-ordination available.
Ophthalmology

Ophthalmology is a medical and surgical specialty concerned with research, diagnosis, and treatment of diseases of the eye and its adnexa, including correction of refractive errors.

The teaching program includes the training of medical students and resident physicians but is also available to graduates in biological sciences. The primary purpose is to qualify medical graduates for careers in ophthalmology.

Emphasis is placed on a scientific approach to problem-solving in diagnosis and treatment. The training program lasts three and a half years, of which six months are reserved for a laboratory or library project.

Clinical facilities are available at three locations beside University Hospitals. The clinical training program culminates in qualification for the examination of the American Board of Ophthalmology.

The Matter of Science degree is not offered as a primary professional objective but testifies to specialization in laboratory skills applicable to ophthalmology. The degree program can be pursued concurrently with the clinical training program, or independent of it. The usual requirements for the Master of Science degree apply. A thesis is to be defended.

The Department maintains several research laboratories; tumor diagnosis, including electronmicroscopy, electrophysiology, histology, and photopigmentation. Clinical clerkships, fellowships and research projects are available.

The Department sponsors biennially an international symposium, annually a national conference and occasionally a state program of continuing education.

Several subgroups are represented in the Department: ocular pathology and physiology, pediatric ophthalmology, retinal disorders, glaucoma, neuro-ophthalmology, echocardiography, contact lenses and refraction service and medical ophthalmic photograpy.

Two features of the Department are outstanding: a large full-time faculty, and the opportunity to prepare for a career of teaching and research in ophthalmology.


Courses
67/100 Elective in Ocular Pathology 1 s.h.
67/101 Elective in Ocular Physiology 1 s.h.
67/102 Elective in Neuro-Ophthalmology 2 s.h.
67/104 Elective in Ophthalmology 3 s.h.
67/105 Elective in Ophthalmology 3 s.h.
67/106 General Ophthalmology 1 s.h.
67/107 General Ophthalmology 1 s.h.
67/108 General Ophthalmology 1 s.h.
67/109 General Ophthalmology 1 s.h.
67/110 General Ophthalmology 1 s.h.

87/400 Ophthalmology Seminar 4 s.h.
87/401 Ophthalmology Seminar 4 s.h.
87/402 Ophthalmology Seminar 4 s.h.
87/403 Ophthalmology Seminar 4 s.h.
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87/420 Ophthalmology Seminar 4 s.h.
87/421 Ophthalmology Seminar 4 s.h.
87/422 Ophthalmology Seminar 4 s.h.
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87/432 Ophthalmology Seminar 4 s.h.
87/433 Ophthalmology Seminar 4 s.h.
87/434 Ophthalmology Seminar 4 s.h.
Oral Surgery
Department Head: Marie L. Hale
Degree: M.D., B.S.

(For information about undergraduate study, see "College of Dentistry")

The aim of the graduate program in oral surgery is to provide preparation for specialty practice. The program is designed to combine clinical and didactic teaching on an individual basis. Every effort is made to adapt the program to the interests, abilities and development of the individual student; however, it is essential to meet certain fundamental requirements.

The recommendations of the Council on Dental Education of the American Dental Association, the Committee on Graduate Training of the American Society of Oral Surgeons and the American Board of Oral Surgery have been carefully considered in planning the structure and scope of training.

Requirements for the Master of Science degree may be completed during a three-year course of integrated didactic and clinical study, including research and the preparation of an acceptable thesis.

The University Medical Center is characterized by outstanding facilities of the dental science departments which stimulate and support scholarly research and superior clinical practice. The facilities of the University Hospitals, the Iowa City Veterans Administration Hospital, and the College of Dentistry and Medicine provide an appropriate environment for graduate training in oral surgery.

Internship

The internship period covers the first year of hospital training, providing an orientation to hospital procedures, integration of basic and clinical sciences, acquisition of the principles of surgery and familiarity with the various aspects of health services.

Competence in clinical oral surgery requires knowledge of the basic medical sciences related to the specialty. Therefore, in addition to hospital and clinical training, the intern takes advanced coursework in such subjects as applied pharmacology, surgical anatomy, pathology, physiology, and microbiology, and reviews such closely-related disciplines as roentgenology, anesthesia, physical diagnosis and laboratory procedures.

The intern becomes familiar with the principles of surgery and develops surgical skills by performing a variety of procedures in outpatient clinics at the University and VA Hospitals and the College of Dentistry. Assistance in the operating room introduces him to major oral surgical procedures.

Residency

The assumption of in-resident responsibility and the opportunity for clinical and operating-room experience are the important aspects of residency training.

The first-year resident gains clinical training in anaesthesiology through a half-month rotation in the Department of Anaesthesiology. Previous advanced training in physical diagnosis, physiology, pharmacology and pathology now assume greater clinical significance. Increased responsibility in the operating room as surgeon and first assistant further develops surgical judgment and skills.

The development and implementation of a research project under staff supervision greatly enhances the value of the residency.

The senior resident assumes responsibility for major oral surgical cases during rotations in the University and VA hospitals. Each senior is assigned on a rotational basis as a clinical and didactic coordinator and assumes responsibility with the staff for clinic operation and Departmental activities.

Upon completion of the internship and residency, the student will have completed the educational requirements for examination by the American Board of Oral Surgery.

Staff: professors Hale, McLearan, associate professors Higa, Kent, Thacker, assistant professors Wollman, instructors Lorson, Wood

Courses for Graduates

87201 Hospital Procedures 1 a.h.
Hospital rules and regulations, patient and Department records, general information relative to hospitalized patients

87202 Studio-Science Review 4 a.h.
Includes head and neck anatomy with classification, histology, pathology, etc. special features by medical and dental staff

87203 Principles of Oral Surgery 3 a.h.
Basics surgical principles in detail, to include inspection classifications and techniques, flap design, suturing, etc.

87204 Clinical Oral Surgery 3 a.h.
Clinical practice on assigned patient problems

87205 Pathology 3 a.h.
Fundamentals of gross and microscopic examination

87306 Turner Dentalrestorative 3 a.h.
Review of materials and methods and all current clinical procedures

87307 Surgical Pathology 3 a.h.
Study of bone and soft tissues found in major oral surgery procedures; special emphasis on post-shield problems and surgical emergencies; may include animal surgery

87308 Radiographic Interpretation 3 a.h.

87309 Psychiatric Rehabilitation 3 a.h.

87310 Principles of Anesthesia 3 a.h.

87311 Literature Reviews and Journal Club 3 a.h.

87312 Surgical Cooperation in Anesthesia for oral surgery procedures

87313 Research Thesis Project 3 a.h.

87314 Professional Ethics 3 a.h.

87315 Principles of surgical ethics, second semester

Basic principle of tissue healing and surgical techniques

Oral Surgery
Orthopedic Surgery

The Clinical Program

During the various rotations, the resident gains experience in trauma, children's orthopedics, adult orthopedics, neurology, rehabilitation, prosthetics and orthotics, rheumatology and basic sciences related to orthopedics.

During the first year, residents are required to take specialized courses in anatomy, bone histology, biochemistry, physiology and pathology.

A weekly seminar covers biomechanics, kinesiology and selected clinical subjects.

Residents attend the Northwestern University courses on lower extremity and juvenile amputees and prosthetics.

The Academic Program

This program begins at the end of the internship year. After completion of the clinical work outlined above, the resident devotes two years to research. The research may be in any field in which the resident is interested, provided it is basic science research in one of the orthopedic laboratories or a basic science department. The research may culminate in a master's or doctor's degree.

Departmental Laboratories

The orthopedic laboratories deal with problems in these major subject areas:

- **Biochemistry**—The biochemistry of mucopolysaccharides and collagen, both normal and those altered in polyglucosans and scoliosis.

- **Biochemistry**—in conjunction with the College of Engineering, biomechanical problems of the upper extremity and biomechanics of the hip and the foot.

- **Cell Biology and Pathology**—ultrastructural studies on normal bone, cartilage, tendons and muscles, and on those altered by experiment and disease.

- **Tissue Transplant and Radiobiology**—skin, bone and cartilage transplantation and the immunologic aspects of these problems.

Facilities

The Department is housed in Children's Hospital, and has an active service in the nearby Iowa City Veterans Administration Hospital.

Facilities include 120 beds, an outpatient clinic, a specialty laboratory, a specialty radiology unit, a brace shop and physical therapy facilities.

The outpatient clinic sees approximately 85 patients a day. Specially clinics deal with such problems as accidents, club feet, congenital dislocated hips, neuromuscular diseases, metabolic diseases, amputees, hips, knees, hands, splints 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 Crippled Children and two state schools for the visually impaired.

Staff: professor Bothwell, Past, Larson, Pomietti, Cooper, professors emeriti, Stearns, Paul, associate professor Pedrazzi, assistant professor Scottman, Stauder, instructor Sprague.

Courses

- **761: Principles of Orthopedics**
  - 24 hours
  - For medical students only; prior approval of instructor required.

- **761: Orthopedic Surgery for Senior Medical Students**
  - 24 hours
  - Assessment for any time period desired, preferably one to two months, to simulate daily duties of a senior's role, including trauma, adult orthopedics (9 A.M.), children's orthopedics, adult and children's rehabilitation, in both large and small hospitals.

- **764: Advanced Orthopedics**
  - 24 hours
  - For selected orthopedic residents, approved by the instructor.

- **765: Orthopedic Surgery for Senior Medical Students**
  - 24 hours
  - Observation of all phases of clinical orthopedics, clinics, ward round, operations, conferences, etc.

- **761: Orthopedic Surgery**
  - 24 hours
  - Weekly conference to review and discuss all cases operated upon in preceding week.

- **762: Developmental Conference**
  - 24 hours
  - For the junior resident, five weekly problem cases presented for discussion and comment, both operative and nonoperative.

- **761: Bone-Pediatrics Seminar**
  - 24 hours
  - Weekly seminar for study of bone lesions from surgical and neuropathic spines.

- **763: Orthopedic Surgery**
  - 24 hours
  - For senior medical students, by arrangement with staff, facilities and supervision available for laboratory program in biomechanics of connective tissues, cartilage, bone metabolism of joint structures and disease, clinical research.

- **762: Orthopedic Surgery**
  - 24 hours
  - For senior medical students, by arrangement with staff, facilities and supervision available for laboratory program in biomechanics of connective tissues, cartilage, bone metabolism of joint structures and disease, clinical research.

- **763: Orthopedic Surgery**
  - 24 hours
  - For senior medical students, by arrangement with staff, facilities and supervision available for laboratory program in biomechanics of connective tissues, cartilage, bone metabolism of joint structures and disease, clinical research.
Otolaryngology and Maxillofacial Surgery

Department Head: Brian F. McCabe
Degree offered: M.S.

The Department provides one of the oldest and largest otolaryngology and maxillofacial surgery training programs in the world. Currently there is a fall-time faculty of 20, including several members from the anatomy, audiology, dentistry and speech pathology professions.

The Department's main objective is to provide a high-level instructional program in otolaryngology and maxillofacial surgery for medical students and residents. To maintain a broad and in-depth teaching program, a large patient load is borne by the Department's faculty and staff in these clinical areas: head and neck oncology, maxillofacial trauma; craniofacial defects, such as cleft palate; disorders of the vestibular mechanism; facial plastic surgery; pediatrics and geriatric hearing problems; voice problems; neuro-otology; surgery of deafness; and all areas usually considered otolaryngologic.

In addition to the major otolaryngology and maxillofacial medical-surgical service, there are four other divisions in the Department which make this program comprehensive: facial plastic surgery, craniofacial defects, speech and hearing, and research.

Another major objective of the Department is to foster research programs aimed to yield new knowledge in the field and provide models for student and resident research training.

All senior faculty members participate in research and all residents are required, as part of the resident training program, to design, conduct and report on a research project during their program of study. In addition, there are several large-scale research programs within the Department in vestibular neurophysiology, cleft palate, collagenase in temporal bone disease, anatomy of the temporal bone, EEG audiometry, pathology of the temporal bone and electrophysiology of the inner ear.

The majority of these research programs receive federal support.

Graduate Course in Otolaryngology

The postgraduate training program in otolaryngology is in accordance with the requirements of the American Board of Otolaryngology. The program comprises a four-year course consisting of basic and clinical science.

The basic science group consists of a series of didactic lectures and laboratory studies preparatory to actual clinical work. It is conducted during the first three and one-half months of residency.

After passing an oral and/or written examination, the student enters the clinical phase of the course, which includes supervised clinical and operative work, clinical conferences, and seminars pertinent to the practice of otolaryngology and its related fields.

A limited number of resident physicians can be accepted each year. Applicants must be graduates of a recognized class-A medical school and must have completed an internship of one year and one year of general surgical training in an approved program.

Upon successful completion of the four-year course, which must include an acceptable thesis, candidates are awarded the Master of Science degree. To complete the requirements, the student must earn at least 30 semester hours of credit, one-third of which must come from the basic science group.

Elective courses of study to broaden the individual's cultural knowledge may be taken by students capable of additional work.

Staff: professors McCabe, Aline, L. Barzantzi, Litton, Morris, Olin, Sprinzenbach; professors emeriti Lii, Rager; associate professors Anderson, Karmakam, Smith, Vaidyanth; assistant professors Abrahamsen, Harmer, Krause, LaVeille, Mendel, Nurrant, Voids; research associate Kaulin, Riu, Tharp, Vander Haar, Windrow, instructor Talbot, fellows F. Bernstein, Ulrich

Courses

66203 Basic Otolaryngologic Science
66201 Research Techniques in Otolaryngology
66202 Clinical Otolaryngology, Rhinology and Maxillofacial Surgery

Presentation of diagnostic methods and80tice and outline of management for otolaryngologic patients may be required.

66204 Special Clinical Areas: Head and Neck: Specialization in head and neck surgery, otolaryngology, and maxillofacial surgery, with emphasis on postgraduate training in otorhinolaryngology.

66205 Clinical Otolaryngology, Rhinology and Maxillofacial Surgery

Surgical treatment of patients in areas of rhinology, head and neck surgery, and maxillofacial surgery, with emphasis on postgraduate training in otorhinolaryngology.

66206 Seminar: Otolaryngology and Related Fields

Critical review of otolaryngologic procedure used in otorhinolaryngology.

66207 Research Otolaryngology

66208 Seminar in Otolaryngology and Related Fields

66209 Clinical Otolaryngology, Rhinology and Maxillofacial Surgery

Clinical treatment of patients in areas of rhinology, head and neck surgery, and maxillofacial surgery.

66210 Seminar in Maxillofacial Rehabilitation

66211 Clinical Otolaryngology

Clinical treatment of patients requiring intracranial or extra-oral procedures, including facial and body procedures.
Pathology
Department Head: George D. Pesick
Degree offered: M.S.

The Department offers a wide range of formal courses and training programs designed for medical, dental, and graduate students specializing in diagnostic pathology and in anatomic and clinical pathology by the American Board of Pathology.

Medical and Dental

Instruction for the M.D. and D.D.S. degrees is provided through courses in general and systemic pathology. Coursework in both areas is designed to fulfill tightly-structured educational objectives, and utilize a variety of learning experiences: lectures, self-instructional tape-slide, programmed text, autopsies, laboratory tours, clinico-pathological conferences and small group discussions of selected case material.

The courses in general pathology introduce the student to the general responses of the body and to various types of injury, including inflammation, neoplasia, immune responses, etc. During the course in systemic pathology, the student learns to apply these general principles to a study of the specific disease entities as the responses occur in the various body systems. Integrated with these courses is a systematic introduction to the principles and applications of laboratory medicine to the understanding and diagnosis of disease processes.

A variety of programs is available for students who wish to pursue in-depth special topics in pathology during other periods of their medical or dental training. Special courses in both anatomic and clinical pathology are offered to electives to senior medical students. In addition a limited number of externships and clerkships are available to predoctoral students.

Graduate

Coursework leading to the Master of Science degree in pathology is available to students of medicine and medical technology. The program is quite flexible in design, to accommodate the special interests and experiences of the individual student. In general it is structured around a research project pursued under the guidance of a selected faculty member; but it allows the student adequate opportunity for formal coursework in pathology and other basic sciences.

Postdoctoral

The Department is approved for two straight internships in pathology and 18 residencies, covering a training span of up to five years. The programs are designed to utilize the patient populations of both University Hospitals and Clinics, and the Iowa City Veterans Administration Hospital.

There is systematic rotation through the various laboratory services, including surgical pathology, autopsy pathology, medical and clinical chemistry, medical microbiology, hematology and blood bank. Adequate opportunity is afforded for concentrated study in such subspecialties as neuropathology, dermatopathology and gastrointestinal pathology.

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, fungi, hemopoietic tissues, heart and blood vessels, as well as medical microbiology, medical chemistry, hematology and blood banking.

A special postdoctoral training program is also offered in medical chemistry designed for Ph.D. biochemists.

Medical Technology

The Department of Pathology is responsible for the Medical Technology Program leading to the Bachelor of Science degree and certification by the Board of Registry of Medical Technologists of the American Society of Clinical Pathologists. (See "Medical Technology" under "College of Liberal Arts").

Facilities

The undergraduate programs are supported by a recently remodeled student laboratory, as well as conference rooms for small group discussions.

At present the Department houses a newly-remodeled modern histopathology laboratory equipped for efficient processing of tissue specimens; a special stain laboratory; a special microbiology histotechnology laboratory; an autopsy room with two dissecting tables; a cytology laboratory; an immunopathology laboratory; and a Departmental library.

Modern automated equipment is in operation in medical chemistry and hematology, and computerization programs are being developed. A service laboratory and a training laboratory are available in medical microbiology. Research facilities consist of individual faculty laboratories and three electron microscope laboratories.

Expansion plans call for doubling the available space and consolidating laboratory operations. This will include construction of new clinical laboratories and teaching facilities.

Staff: Professors Fishcer (Oral Pathology), Kopka, McCormick, Pesick, Rodman, Routh (Biochemistry), Staender, Warner, Associate Professor Civler, Kent, Korns, Ron, Schochet; Associate Professors Barrett, Nicholoson, M. L. D'onnor, Pflugy, Shackleford, Simmons; Clinical assistant Professor Cross (Henry Hospital, Iowa City); clinical associate professor Cooper (VA Hospital, Des Moines); clinical assistant professor Whillumin (Broadlawns Hospital, Des Moines); Medical Technology Program coordinator Gloria M. Glisic, J. E. D'onnor, Raitt, Schwabauer, Winkel

Courses

All courses are credit by instructor

8405 Introduction to Medical Technology 1 s.h.
Lectures, survey of roles of medical technologists in various diagnostic laboratories, professional organization, certification relationships with other laboratory professions.

8405 Medical Technology Premed 1 s.h.
Internships through various sections of clinical pathology service laboratories; under supervision, performance developed in performance of laboratory procedures on patient specimens, and organization of service laboratories learned.

8405 Principles of Pathology 1 s.h.
Lectures and demonstrations; emphasis on terms, mechanisms and principles of disease; ability to communicate these in simple terms; topics include inflammation, infection, changes of growth, obstructions, degenerations and acute and chronic metabolic disorders; introductory course for allied health professional students
Pharmacology

70004 Pediatric Endocrinology and Diabetes 4 a.h.
Pathophysiology with clinical aspects of endocrine disorders; intensive experience in management of childhood diabetes; two students; September through May; four years
70226 University Hospital School 2 a.h.
Describe the health care needs of pediatric residents and their families. Clinical evaluation, parent counseling, therapy regimes and introduction to the hospital staff; two students; September through May; two years

Pharmacy Department Head: J. P. Long
Degree offered: B.S., Ph.D.

The Department is involved in the professional education of pharmacy, dental and medical students. A recognized graduate program with a full series of courses has been developed. More recently, the educational program has been expanded to include clinical pharmacology and clinical toxicology.

The Department provided the offering of pharmacology (71-120) to undergraduate students with little or no science background. The lecture-discussion sessions emphasize the role of drugs in our society and establish a background so rational decisions can be made.

New, modern, well-equipped laboratories and lecture rooms are available for drug research and education.

The faculty participates extensively in postgraduate courses and conferences.

Extensive research and training grant programs involve members of the faculty, these programs often involve faculty from other departments and colleges. The Department participates in the Neuroscience Program, the NSF Center of Excellence and the Center for Biochemical Pharmacology and Toxicology.

Graduate Study

Prerequisites for graduate study include undergraduate background in chemistry, biology and mathematics. Research areas in which the Department is engaged include anesthetics, clinical pharmacodynamics, psychopharmacology, cardiovascular pharmacology, renal pharmacology, biochemical pharmacology, drug metabolism, bio-chemical toxicology and toxicology.

Required courses for the M.S. degree include graduate courses in physiology and biochemistry and 71-100 Introduction to Pharmacology, 71-201 General Pharmacology, 71-203 Pharmacology Research, 71-204 Pharmacology Seminar, 71-206 Biochemical Pharmacology, 71-207 Neurobiology and Behavior, 71-210 Biometrics and Biostatistics, 71-210 Special Topics in Pharmacology and 71-215 Toxicology or acceptable equivalents.

These requirements and the research for the thesis can be completed in two years or less. The degree is awarded upon satisfactory completion of comprehensive written and oral final examinations and acceptance of the thesis.

Required courses for the Ph.D. degree include all those required for the M.S. degree. In addition, completion of two or more courses in areas related to the student's interests, as approved by the advisor, is required. There is no Departmental foreign language requirement. However, individual faculty advisors may have such a requirement for their students. Satisfactory performance in written and oral comprehensive examinations, usually takes one year prior to expected graduation, is also required. These requirements and the dissertation...
research can usually be completed with four years' graduate work beyond the bachelor's degree. The Ph.D. is awarded upon acceptance of a dissertation and satisfactory performance at the final oral examination.

Staff: professors Becker, Brody, Long, Mitchell, Spratt, Tewhitly, Williamson, Wilson, professor emeritus Cross; associate professors Steele, Van Orden; assistant professors Baron, Brinkman, Fischer, Roberts

Courses
71:062 Medical Pharmacology 4 s.h.
Lecture-laboratory: pharmacodynamics and therapeutic use of drugs; action on central nervous system not included; first semester, sophomore year
71:111 Pharmacology for Dental Students 4 s.h.
Lecture-conference-laboratory: pharmacologic actions and therapeutic uses of drugs, including emphasis on effects on tissues of special interest to dentistry; second semester, junior year
71:100 Introduction to Pharmacology 4 s.h.
Pharmaceutical and experimental approaches to drug research; emphasis on biomedical concepts and factors of biological interest; chemotherapy and receptor theory included; no prerequisites, first semester
71:075 Lecture-laboratory: general principles; open to seniors in pharmacy and qualified graduate students, preclinical biologic and organic chemistry; second semester
71:085 Pharmacology and Toxicology 3 s.h.
Courses of 71:102, lecture-laboratory; emphasis on effects of special interest to pharmacology; open to seniors in pharmacy, first semester
71:325 Drugs: Their Nature, Action and Use 3 s.h.
Lecture-laboratory: principles of drug action and drug toxicity; specific classes of drugs covered include adrenergics, anti-inflammatory agents, antibiotics, anticoagulants, analgesics, and others. Open to all students; course material general to students not having strong background in science; no prerequisites; first semester
71:021 General Pharmacology 4 s.h.
Same as 71:102; prerequisite introductory course in physiology and biochemistry, and consent of instructor
71:095 Pharmacology Research 2 s.h.
CR approval
71:044 Pharmacology Seminar 1 s.h.
Consult Department head for permission to register
71:056 Cardiac Cardiovascular Pharmacology 4 s.h.
Disorders of the cardiovascular system and mechanisms of action of cardiovascular drugs, in the course: consent of instructor; five semester, alternate years, offered 1972-73
71:066 Biochemical Pharmacology 3 s.h.
Lecture-laboratory: biochemical aspects of drug absorption, distribution, metabolism, excretion, receptor interaction and enzyme inhibition; prerequisite: consent of instructor; five semester, alternate years
71:006 Lectures, demonstrations and conferences on nervous system; presents material from anatomy, physiology, pharmacology, psychology and medical science; in integrated fashion; graduate students in pharmacology and others who desire to participate in seminar in neuropharmacology which will review articles and important current research papers critically discussed; prerequisite consent of instructor; five semester, alternate years
71:066 Pharmacology and Biostatistics 3 s.h.
Preclinical and applied statistical analysis is design of experiments and interpretation of biological data. Begins with student's exam, analysis of variance; least square regression; chi square; Fisher's exact probability; Mann-Whitney U test, principle of bioassay and experimental design; laboratory exercises include demonstration data and designing experiments; prerequisite consent of instructor. May be taken by first-year graduate students with proper background
71:160 Special Topics in Pharmacology 2 s.h.
For pharmacology majors and other interested students; selected topics in pharmacology, toxicology or physically based research and drug-induced injury, mechanisms of action, agents and mechanisms of action in experimental biology, excretion and mechanisms of action in experimental biology; may be taken for credit with approval of instructor; five semester, alternate years, offered 1972-73
71:150 Clinical Toxicology 1 s.h.
Acute poisoning and management, general topics of toxicology; prerequisite: 71:160 Medical Pharmacology or equivalent; first semester
71:586 Clinical Pharmacology and Therapeutics Lecture-Demonstrations 3 s.h.
Lecture-demonstrations: lecture-demonstrations in clinical pharmacology and therapeutics; selected emphasis on pharmacologic approach to therapy of diseases in man; for third- and fourth-year medical students, pharmacy students, other preclinical students; same as 70:380 Internal Medicine; second semester

Physical Therapy

See "College of Liberal Arts"

Pharmacology and Biophysics

Department Head: C. Adlin M. Heghen
Degrees offered: M.S., Ph.D.

This program is intended primarily to prepare the student for a career of research and teaching, usually at the college, graduate and professional school levels. Graduate training in physiology and biophysics usually progresses to the Ph.D. degree. Those who successfully complete the program often postdoctoral research fellowships in their area of interest for one or two years before applying for positions of their choice.

Prerequisites for Graduate study include a year each of biology, physics, physiology, chemistry, physical chemistry, and calculus. The undergraduate major is not narrowly prescribed, and the graduate student group commonly includes persons with baccalaureate degrees in biology, chemistry, physics, mathematics and engineering.

The Ph.D. program begins with the early completion of deficiencies in prerequisite courses and the acquisition of further knowledge and capability useful to the particular program goals. The selection of courses is determined by the individual's evolving interests and by consultation with a faculty advisor. Teaching experience is gained through supervised participation in course offerings of the Department.

Comprehensive examinations are taken usually by the end of the second year of graduate study. One or two years later, when the candidate has attained competence in independent scholarship—primarily through research under the immediate supervision of an advisor—the final examination takes place. This consists of the defense of a thesis. No candidate is recommended for the degree Doctor of Philosophy until, with the approval of the advisor, the thesis dissertation has been prepared for formal publication and the manuscript has been accepted for publication in an appropriate scientific journal.

Applicants whose career goals would not best be served by the Ph.D. may, with the assistance of the Department, develop a program leading to the M.S. degree. Acceptance as an M.S. candidate is contingent on faculty acceptance of the program of study.

Fellowship support is available for doctoral students.

Facilities

The Department is housed on the top two floors of the Basic Sciences Building, a new facility for research and teaching. In addition, a new unit for research in neurophysiology is operating
Preventive Medicine and Environmental Health

Department Head: E. P. Lattan

Preventive medicine may relate to the individual patient when knowledge and techniques from medical, social and behavioral sciences are applied to prevent disease or its progress, or it may encompass the whole community by applying the knowledge and skills of medical and allied sciences in an organized community effort to maintain and improve the health of individuals. Environmental health is the study and control of the physical, biological and social factors of the environment and the manner in which they influence the health of the individual or groups of individuals.

The teaching of preventive medicine and environmental health at Iowa began in 1885, when a course in sanitary science and public health was introduced. The present Department was established in 1921.

Since its inception the Department has continued to offer courses in sanitary science and other areas of public health, including epidemiology and communicable disease control, institutional and food sanitation, industrial hygiene, biostatistics and health administration. Many graduates of the Department have gone on to national and international achievement in public health work.

In 1955 the Department sponsored the development of the Institute of Agricultural Medicine, the first in the western hemisphere dedicated to the study of the occupational health problems of the agricultural worker. Since then the Institute has achieved national and international recognition for its study of the health problems associated with the diseases of animals transmitted to man, agricultural accidents and the effects of pesticides on human health. The varied programs of the Institute provide practical training for students of the health professions as well as for medical students at the graduate and postgraduate levels.

The Department excels in its biostatistics program, where undergraduate and graduate instruction is provided by a nationally-recogized faculty. Departmental programs are enhanced through affiliations with the State Hygienic Laboratory, the University Environmental Health Service, Health Service and the Department of Civil Engineering.

The Department has traditionally offered degrees at the master's and doctoral levels with emphasis in preventive medicine, environmental and occupational health. The Department is presently (1971-1972) undergoing a complete revision of its curriculum and program offerings to provide instruction in the newer concepts of the community and social aspects of health. A new undergraduate major in environmental science is being developed.

StafF: professor C. M. Berry, H. F. Hell, Ivascen, Knapp, Knowler, Leaverton, Long, professors emeriti Barnes, Bonga, Miller, Top, associate professors Hanster, S. Y. Hui, Kilpatrick, Koors, MacDoanld, McDonal, Moss, Powel, associate professor Burmeister, Fisher, Misek, R. B. Wallen, Wilson; asso- ciate professors emeriti Boughey, associates J. R. Berry, Burt- kovics, McConnell; assistant instructor McMullen

Courses

301 Health Science I
2, 3, or 6 s.h.
Section 1—Health Sciences: response of human body to stresses and the influence of physical, social and cultural environment; disease may and their incidence; three semester hours. Section 2—Health Care Systems: historical and current approaches to delivery of health care; prospects for future health care delivery systems; two semester hours.

302 Health Science II
2, 3, or 6 s.h.
Section 1—Environmental Health: fundamentals of social, cultural and physical environments; environment/quality; three semester hours. Section 2—Environmental Health: public health and regulatory; organizations engaged in environmental management; economic and administrative processes associated with management of environment; two semester hours.

323/324 Public Health Aspects of Food and Housing
2, 3
Section 324: Aspects of food and food production and processing; acquaintance with laboratory procedures and field training; open to seniors and graduate students; optional (instructor).

341/441 Medical Microbiology
4 s.h.
Prerequisites: present or other passage of public health importance; their life cycles, interrelationships, methods of diagnosis and prevention; lectures, demonstrations, conferences and laboratory; medical technologies and undergraduate courses in biology and/or microbiology. Three semester hours. Section 341: Methods identifying virology factors to human disease by study of distribution of diseases in nature or populations; disease and principles of immunology and protective strains; historical and current concepts in virology studies examined. Three semester hours. Section 441: Laboratory course in experimental virology; primarily for students engaged in research in medical and related subjects; may be taken by qualified individuals interested in research in virologic fields; same as Statistics 252.101

342/442 Statistical Methods in the Biomedical Sciences
3 s.h.
Prerequisites: calculus and elementary probability; exposure to statistics in related field; one semester hour of calculus; one semester hour of elementary probability. Three semester hours. Section 342: Statistical methods and concepts particularly appropriate for biomedical research; topics include descriptive methods, elementary probability, distributions, population and samples, methods for assessing percentage data and paired and unpaired measurement data, hypothesis testing, analysis of variance, chi square and analysis of clinical trials and epidemiology; same as Statistics 252.102. Three semester hours. Section 442: Techniques of constructing and analyzing sample surveys including general methods of estimation, properties of estimators, simple random sampling, stratified sampling, ratio and regression estimation, systematic sampling, quota sampling, multiple or cluster sampling; prerequisite Statistics 252.103, 252.40 or equiv- alent; same as Statistics 252.103

341/441 Environmental Health
3 s.h.
Lectures, discussions, demonstrations and field trips dealing with health and safety factors in industrial environment: public health measure and methods of Defense against Hazards

343/443 Laboratory and field training in evaluation of specific occupational health hazards; same as Statistics 252.103

5307 Research: Preventive Medicine and Environmental Health

5521/6521 Seminar
2, 3
5523 Thesis

Psychiatry

Department Head: George Winikoff

The Department of Psychiatry is engaged in teaching medical students in two areas. It provides medical students with instruction directed toward their acquisition of expertise in handling various problems in living. Further, it presents a systematic and
Radiation Biology

72531 Problems in Psychiatry 1 cr. ar. 
72532 Law and Psychiatry 1 cr. ar.

Open to seniors in law and medicine; mental disease considered from medical-legal view by means of clinical and text study

Radiation Biology

Department Head: Thos. C. Evans
Degrees offered: M.S., Ph.D.

Radiation biology is the study of the properties and biological effects of radiotopes and ionizing radiations, such as X-rays, and the use of these radiotopes as tools in the study of living processes. The field comprises parts of several disciplines, among them biology, physics and chemistry.

Undergraduate Courses

Two courses, 77:103 Introductory Radiation Biology and 77:106 Radiobiological Safety and Health Physics, are open to undergraduates interested in these fields.

Graduate Programs

The M.S. degree in radiation biology is usually taken by students who plan to stop their training, at least temporarily, to take employment at a technical level. The program is utilized by students who later complete work for the Ph.D. in a related field.

The Ph.D. program in radiation biology is open to graduate students with a background of study in physics, chemistry, mathematics, biology, health sciences, veterinary medicine or engineering. Students completing this program find professional appointments in departments of radiology or nuclear medicine, as in cancer research centers.

After the student has completed the introductory course he or she may elect to emphasize one or more aspects of radiation biology. The details of his or her program are based upon previous training, interests, abilities and career objectives.

Some students elect to emphasize training in physical aspects, such as radiological physics or health physics. Others major in biological aspects. In either case a broad base rather than specialization is the goal.

The properly-prepared student will have had several courses in biology, chemistry, physics and mathematics before starting a graduate program. In addition he or she should have a reading knowledge of science French or German, and should have competence in statistics or computer programming before completing the Ph.D. program.

In addition to formal lecture, the program involves small-group conferences and discussions. Laboratory exercises are emphasized, and the student has an opportunity to become acquainted with many types of instruments and techniques.

Students will have at least one semester of experience as teaching assistants, and at least one as research assistants. A limited number of paid assistantships and fellowships are available.

Courses

725:03 Clinical Psychiatry for Junior Medical Students 6 cr. Syllabus: The student will examine some cases, report on hospital visits, and write and examine patients in Psychiatric Hospital, through 15-week period. history taking, mental examination and interviewing.

725:05 Research Psychiatry or. cr. ar. 

Research training for physicians and physicians who have had training in scientific methodology especially for special investigations in biological or psychological problems related to psychiatry.

725:06 Research Psychiatry or. cr. ar. 

Continuation of 725:05, but may be taken as independent unit.

725:07 General: Biology of Behavior 2 cr. Syllabus: basis of behavior, genetics, socialization, psychology, biology, psychophysiologic and psychopharmacologic factors in relation to normal and abnormal behavior, evolution of these factors to therapy.

725:09 Readings in Psychiatry 1 cr. 

Readings, discussions, laboratory practice in clinical and experimental electroencephalography, equi-melence in technique, qualitative interpretation and systemic approach to clinical electroencephalographic examination of instrument.

725:20 Research in Psychiatry or. cr. ar. 

Open to seniors in law and medicine; mental disease considered from medical-legal view by means of clinical and text study.
Courses

74601 Introduction to Radiology 1 s.h.
Basic concepts in radiologic diagnosis of bone, abdominal and body lesions; medical radiologic techniques; basics and techniques of radiation therapy; introduction to nuclear medicine; two weeks, offered September through July.

74602 Clinical Radiology 2 s.h.
Physical diagnosis and treatment through utilization of roentgenology, ultrasound, bone, chest and vascular radiology; two students per subscriber; introduction to nuclear medicine; two weeks, offered September through July.

74603 Pediatric Radiology 2 s.h.
Interpretation of radiologic examinations of pediatric patients; joint conferences with pediatricians and pediatric surgeons; one student; prerequisite: Introduction to Radiology; subscription time: two weeks, offered September through July.

74604 Angiography 2 s.h.
Clinical indications, techniques and interpretation of abdominal and aortic angiographic procedures; one student; prerequisite: Introduction to Radiology; subscription time: two weeks, offered September through July.

74605 Neuroimaging 2 s.h.
Clinical indications, techniques and interpretation of transcranial cerebral angiography, cerebral and cerebrospinal myelography, myelography; one student; prerequisite: Introduction to Radiology; subscription time: two weeks, offered September through July.

74606 Radiation Therapy 2 s.h.
Radiation therapy as modality of cancer therapy; indications, techniques, objectives; two students; subscription time: two weeks, offered September through July.

74607 Nuclear Medicine 2 s.h.
Clinical applications of nuclear medicine, scanning theory and techniques; one hour per week introduction to Radiology; subscription time: two weeks, offered September through July.

Surgery

Chairman: B. E. Ziffren
Vice-Chairman: Lawrence H. DeBenedictis
Degree offered: M.B.

The Undergraduate Program

Programs are available only to medical students and to qualified individual students in associated health sciences.

The undergraduate program in surgery develops awareness of surgical therapy's place in the treatment process. Experience is placed upon basic emergency techniques; trauma surgery; oncology; burns; gastrointestinal and vascular disease; endocrine disease; particularly the interrelationships; thoracic-cardiovascular conditions; and neurosurgery.

A majority of the courses involve patient-oriented discussions and practical exercises interspersed with operating room experience. However, there are lectures and conferences on specific topics.

Special programs in selected topics of surgical research, independent study and clinical experiences outside the University Hospitals complex are available to individual senior medical students by special arrangement with the faculty.

Admission requirements are those of the College of Medicine, except in the case of specific topics designed for students of the associated health sciences.

Graduate Programs

The graduate programs leading to a master's degree in surgery combine coursework in allied scientific fields with a year of intensive research in surgical problems either in the clinic or the laboratories. The program is designed primarily for surgical residents who plan a career in academic surgery; it is available only to medical students and to qualified individual students in associated health sciences.

The content of the master's program, both with respect to required coursework and laboratory investigation leading to the thesis, is determined by the resident involved and his or her faculty advisor, in consultation with the Department head. Special programs in basic science and clinical research are available to interested students, but they carry no academic credit unless they are related to a master's degree program.

Required: GRE Aptitude Test
Undergraduate major in the field of graduate study
One year devoted full time (or equivalent) to research
Thesis—Formal, publishable, defended in oral exam

Facilities

The Department's Belzer Unit provides a unique opportunity to investigate problems involved in the preservation of organs harvested for transplantation. The Departmental Biochemistry laboratory provides the equipment, space and technical expertise necessary to support a wide spectrum of basic science metabolic research projects. The Departmental Burns Unit, the only one of its kind in the state, provides adequate patient material for both clinical and basic science research.

The Faculty

Special faculty strengths are centered in the fields of pathophysiology and problems of severe burns, the surgical control of morbid obesity, inflammatory bowel disease, the pathophysiology of biliary tract disease and pediatric surgery. The thoracic-cardiovascular and neurosurgical programs have particular expertise in the clinical management of the spectrum of diseases in their specialties.

Both the undergraduate and graduate programs in surgery provide opportunity for a unique combination of patient-care-oriented experience and basic surgical research designed to give the interested student a deep awareness of the place of surgery among the physician's skills.

Staff: professor Curreri, DeBenedictis, Ehrenhaft, Graf, Lawton, Meinn, Ferrer, Reitnau, Soper, Ziffren; clinical professors Palumbo, Warakian; associate professors Gulezian, Hartford, Frientz; clinical associate professor Dragstedt, Lala, Sharpe, Stroh; assistant professors Baker, Barnes, Detry, McDonnell, Okawara, Tatro, Ziek; visiting assistant professor Flaxart

Courses

76101 Basic Emergency Techniques 1 s.h.
Surgical-lacerated primary course in emergency medical techniques; emphasis on practical applications of certain materials.

76111 Introduction to Clinical Medicine
Multidisciplinary course designed to prepare medical student for junior clerkship; sequence of clinical and laboratory examination; setting student's recognition and understanding of disease complex.

76200 Clinical-Surgical Clerkship 8 s.h.
Six-week course in clinical surgery; required of junior medical students.

76102 Neurosurgery-Neurosurgical Conference 1 s.h.
cr. arr.

76130 Principles of Surgery
Listed under Physical Therapy

or arr.
Urology

Courses
76/154 Clinical-Urology Junior Medical-Student Clerkship 2 s.h.
Provides extensive two-week course of study on urologic wards; junior medical students examine for patient care under supervision of resident, undertaking initial evaluation and management in pre-and postoperative care of patients; students exposed to clinical and diagnostic urology through visits to Urology Department of a university hospital. Includes inpatient case reviews and topics in urology covered daily by senior staff physicians.
76/158 Urology 3-Way Interpretation 1 s.h.
Three-day tutorial in patient care; to review radiographic procedures; provides wide experience in urology radiology; couse includes weekly urology-radiology conference; which students attend to attend conferences guided by Radiology and Urology staff.
76/158 Urology Grand Rounds 1 s.h.
Weekly conference of Urology Department; increasing synthetic clinical cases of work discussed in detail, with preparation in didactic lecture from association lecture and management problems; review of selected pathologic material demonstrated.
76/157 Urology Seminar 1 s.h.
Weekly review of selected material by senior staff, in didactic lecture sessions; refresher for resident and student participants; case history review and radiographic interpretation provide significant additional in session; research review and the presentation of papers of senior staff and resident personnel reviewed.
76/159 Advanced Clerkship 4 s.h.
Students become integral member of urologic staff, spends full time in Department for four weeks, assigned in urologic department; under direction of junior and senior staff, responsibility for obtaining history, performing physical examination, conducting diagnostic evaluations and following therapeutic manipulations of assigned patients; progress reports are given for such patients, interpreting history in terms of pathologic lesions; significance of the laboratory, roentgenographic and instrumental examinations; reason for choice of therapy; lessons learned in managing case, and examination based upon student's experience conducted by senior urologic staff at conclusion of clerkship.
76/159 Seminars in Urology 1 s.h.
Responsibility for presentation one semester during year; preclinical and clinical Department members available to assist in discussion, which is tape recorded and distributed to all interested members. The taped material is available for examination in subcommittee conducted at end of each 13-week period.
76/869 Special Studies 3-4 s.h.
Individual predicated or clinical project supervised by class member and faculty representative of urologic staff and, where appropriate, member of another predicated or clinical department; no program is approved or instituted without permission of Department head, upon completion of project, thesis prepared followed by oral examination.
76/11 Urology 4 s.h.
Full-time in departments of Urology and Radiology, where indications, contraindications, complications and techniques of urologic procedures performed and diagnostic practice is interpreted of home provided; course members attend all Departmental conferences.
76/112 Uropathology 8 s.h.
Participation with Urology and Pathology departments in study of anatomic pathology material derived from postmortem examinations and surgical procedures; additional study of selected pathologic material, with gross and microscopic, provided opportunities for students to gain both laboratory skills and knowledge of urologic pathology. Preparation of written discussion of pathologic material seen during period of study, with particular emphasis placed upon correlation of pathology and clinical findings; practical examination of microscopic and gross specimens as well as written examination.
76/120 Grand Rounds (Surgery) 3 s.h.
Provides each week the Department moves on to occasion to discuss urologic disease; students other than junior students assigned to service may attend and participate; to receive credit for course, student must attend 10 such conferences and prepare written report summarizing topics discussed, with detailed discussion of five topics.
76/141 Prostate Disease 4 s.h.
Research on clinical study of prostatic disease; acquaintance made to provide experience in Department's ongoing research in carcinoma of prostate; special program of individual interest may be arranged; clinical material with prostatic disease assigned as available; at conclusion of period, thesis prepared covering research activity; written examination covering clinical experience.
76/148 Urological Oncology 4 s.h.
Intensified clinical experience in diagnosis and management of all types of genitourinary neoplasms; acquisition of understanding of general principles in differential diagnosis and surgical, radiation and chemotherapeutic modalities utilized in care of genitourinary cancer; participation in Department's ongoing research in prostatic carcinomas expected; at conclusion of course, thesis prepared on some aspect of one of these tumors; written examination.
76/119 Urologic Embryology and Reproduction 2 s.h.
Acquaintance with current status of male embryology, laboratory methods of measuring seminal parameters, semen volume and evaluation of climax problems, human male sexual development, prostatic and seminal vesicle development, development of potential levels, such as testis volume and hormone levels; management of clinical cases, from test to test, in cases of infertility discussed.
76/117 Transplantation Seminar 8 s.h.
Collaborative studies of medicine, general surgery, pediatrics and urology, providing introduction to genetics and immunology of transplantation as they apply to clinical application today, particularly in chronic renal failure; each student will individualized program of guided literature review, clinical exposure and research laboratory participation; by special arrangement with coordinating services. There can be experience in sterile-room failure and diagnosis, surgical and medical management of transplant patients, biocompatibility and immunology research, detailed plans should be made at least two months in advance of rotation.
Administrative Staff
Dean: Evelyn R. Givett
Assistant Dean, Graduate Programs: Elke Reamsma
Assistant Dean, Undergraduate Program: Mildred Freist
Registrar, Admission Project: Adrienne Seidman
Director, Continuing Education: Paul Zamick
Degrees offered: B.S., M.A.

With the colleges of Medicine, Dentistry and Pharmacy, the College of Nursing is an integral part of the University Health Center, sharing in and contributing to teaching, research and patient-care resources which have earned international recognition. This provides an unusually fine setting for college preparation for nursing, because the educational and clinical resources which are needed to educate nurses are available on or near the campus. This also makes it possible for the faculty and students to participate fully in University life and to contribute their time, interest, and abilities to the many general and special activities of a major and modern university.

The baccalaureate program for licensure as a registered nurse is currently approved by the state licensing agency, the Iowa Board of Nursing. In addition, both the baccalaureate and the graduate programs are accredited by the Department of Baccalaureate and Higher Degree Programs of the National League of Nursing, which is the professional accrediting agency for college and university programs of nursing education.

Undergraduate Program
The purpose of the undergraduate program is to prepare professional nurses with competencies relevant to contemporary and emergency health care systems and to provide a basis for graduate study.

Graduates of this program are employed in a variety of health agencies and settings, such as hospitals, clinics, extended care centers, nursing homes, public health agencies, industries, governmental agencies and the armed services.

The baccalaureate program comprises coursework in four areas: communication skills, the social, biological and physical sciences basic to nursing, the student's choice of electives, and professional nursing. Graduation normally requires four academic years and 124 semester hours of credit.

Preparatory coursework for the study of nursing includes chemistry, anatomy, physiology, human growth and development, microbiology, and nutrition, in addition to the College of Liberal Arts' core sequences in rhetoric, the historical-cultural area and literature.

Junior- and senior-year courses include medical-surgical, maternal and child health, psychiatric, public health and senior nursing, as well as literature, sociology and some electives. Studies of nursing theory are coordinated with opportunities for related supervised nursing practice in the University Health Center, the Iowa City Veterans Administration Hospital, other local hospitals and nursing homes, and selected public health agencies.

There are three ways to enter the College of Nursing's undergraduate curriculum:

- In the fall semester after completing 30 hours of required coursework;
- In the eight-week summer session after completing a two-year prescribed sequence of general education and science courses;
- By transferring from another college with advanced standing; this avenue is also available to the registered nurse who has completed prescribed general education and science courses.

The Cooperative Plan
In cooperation with The University of Iowa College of Nursing, 11 institutions of higher education have developed a planned curriculum offering which will satisfy the two-year sequence of courses required for entry into the College of Nursing. The College offers an academic counseling service to all students enrolled in this plan.

The cooperating institutions are: Iowa State University, Ames; the University of Northern Iowa, Cedar Falls; Iowa Central Community College, Fort Dodge; North Iowa Community College, Mason City; Marshalltown Community College, Marshalltown; Muscatine Community College, Muscatine; Upper Iowa College, Fayette; Breez Cliff College, Sioux City; Morning-side College, Sioux City; Simpson College, Indianola; Luther College, Decorah.

Expenses
Students pay the general University fees throughout the program. The initial cost of a student's uniform, which includes three uniforms and two caps is approximately $60.00. This amount is payable at the end of the freshman year. The student also will need to purchase white shoes, bandage scissors and a watch with a sweep second hand. Senior students are required to provide their own means of transportation for Family and Community Health Nursing.

Financial Aid
In addition to the assistance available to University students generally, there are special sources of assistance to nursing students including federal loans made available through the Nurse Training Act of 1971.

Student Organizations
College of Nursing students have their own Association of Nursing Students and are also eligible for membership in the State and National Association of Nursing Students.
Undergraduate Requirements

To graduate, the student must complete the 126-semester-hour required program; must achieve at least a 2.0 grade-point average in general education as well as in nursing coursework; and must complete the last 30, or 45 of the last 60, semester hours at The University of Iowa.

Academic Standards

To be considered for admission to the College of Nursing, the applicant should have a cumulative grade-point average of at least 2.3 (A = 4) for all college coursework taken.

Selection Factors

Fulfillment of minimum admission requirements does not guarantee admission to the College of Nursing. From applicants who meet minimum requirements, the College's admission committee selects those who appear to be best qualified. The committee may require personal interviews.

Faculty Advisors

Faculty advisors from the College of Nursing are available to help prospective nursing students plan their programs, and each student in the College works with a faculty advisor.

Application Deadlines

Applicants with one year of college work are admitted to the College of Nursing as sophomores in the fall semester only and must apply between July 1 and April 15 of the year before their anticipated enrollment. Applicants with two years of college work who are prepared to enter the College for the summer session must apply by November 15 of the sophomore year. Registered nurses are admitted in both the fall and spring semesters; they must apply by April 15 for the fall semester, or by November 15 for the spring semester.

Degree Requirements

Accredited by the National League for Nursing, this program offers majors in medical-surgical nursing, nursing of children, psychiatric nursing, and nursing service administration. It provides preparation for positions in nursing as clinical specialists, teachers, supervisors, or administrators.

Admission

Graduate students in nursing register in the Graduate College, and degrees are conferred by that College. The general requirements of the Graduate College relating to admission apply with the following special requirements:

1. A Bachelor of Science degree in a nursing program which includes public health nursing theory and practice (applicants not meeting this condition will meet individually designated course requirements);
2. Evidence of the fulfillment of the legal requirements for the practice of nursing (licensure in Iowa is not required);
3. A grade-point average of 2.7 in the baccalaureate program, or demonstrated ability in graduate courses as stipulated by the Graduate College (conditional admission to the nursing major granted to applicants with grade-point average of at least 2.5; and, for purpose of taking non-nursing courses, to applicants with grade-point average of not less than 2.3).

Program Requirements

Registration for elective requirements is possible in any term, but initial enrollment in advanced nursing courses which are offered sequentially is limited to the fall semester. Curricula in the clinical majors are designed to be completed in three semesters and those in nursing service administration in two semesters and a summer session.

All regulations of the Graduate College pertaining to academic standing, probation, and dismissal are applicable to graduate students in nursing. Transfer credit applies to the degree if it is limited to 6 credit hours, and must be approved by the dean and advisor. A thesis is required of students in the medical-surgical nursing major, and may be selected by others. A major paper or project is included in the final course in all other majors for synthetic students. A written general examination is required of all degree candidates.

Financial Aid

The College of Nursing participates in the Professional Nurse Traineeship Program as administered by the Division of Nursing, U.S. Public Health Service, and in the National Institutes of Mental Health training program. Grants made to the University under these programs provide a limited number of traineeships for students who are preparing for positions as nurse specialists, teachers in schools of nursing, and supervisors and administrators in nursing services. Awards are made after the student has been accepted for full-time study, but a preliminary application may be filed when the application for admission is submitted. This assistance is restricted to citizens of the United States. Forms may be obtained from the Graduate Program Office, College of Nursing, The University of Iowa.

Medical-Surgical Nursing—33 semester hours

96:232:234 Advanced Medical-Surgical Nursing 8 s.h.
92:120 Research Methodology 3 s.h.
96:220 Research in Nursing 2 s.h.
96:299 Thesis 6 s.h.
Statistics 3 s.h.
Electives from one related area (Physiotherapy or behavioral sciences) 8 s.h.

Nursing of Children—31 semester hours

96:242:244 Advanced Nursing of Children 14 s.h.
96:120 Introduction to Methods of Nursing Research 3 s.h.
96:220 Research in Nursing 2 s.h.
96:128 Perspectives in Nursing 2 s.h.
Electives (from relevant area) 11 s.h.
Thesis 6 s.h.
(But any course in statistics required prior to admission or in fall semester)
College of Nursing

96:295 Nursing Research

Analysis and critical appraisal of nursing theories and nursing research; concretization of research findings; completion of research proposal; prerequisites: 96:191, statistics

96:295 Advanced Medical-Surgical Nursing I

4 a.h.
Contemporary readings in natural, behavioral and applied sciences for derivation and formulation of concepts and principles underlying clinical area for nursing interven-
tion; focus upon analytical approach to major problems confronted in care of medical-surgical patients with provision for clinical experiences. Continuation of 96:232, which is prerequisite.

96:295 Advanced Nursing of Children I

4 a.h.
Growth and development of child; philosophy of child care; health promotion and anticipatory guidance; experience with well children in variety of settings provided.

96:354 Advanced Nursing of Children II

4 a.h.
Child's response to illness and hospitalization, care of ill child in variety of settings, setting responsibilities in facilitating optimum health care for children; prerequisite: 96:342.

96:295 Advanced Nursing of Children III

6 a.h.
Individualized planned experiences in selected clinical or functional areas, investiga-
tive studies and seminar conferences; prerequisite: 96:343.

96:295 Advanced Psychiatric Psychiatric Nursing I

3 a.h.
Selected theories of parapsychical development and principles and techniques of nursing intervention with individuals and families with psychiatric-mental health problems; prerequisite: 96:234.

96:295 Advanced Psychiatric Psychiatric Nursing II

3 a.h.
Principles of group therapy and group therapy, consultative practice, applica-

96:295 Advanced Psychiatric Psychiatric Nursing III

3 a.h.
Supervised practicum experiences in providing psychiatric nursing intervention for individuals who have psychiatric-mental health problems and in providing emo-
tional support to families of these patients; —with psychiatric care and general hospital settings, concurrent with 96:295.

96:295 Clinical Practice in Psychiatric Nursing II

3 a.h.
Supervised practicum experiences in providing psychiatric nursing intervention for individuals, families and groups with anticipated patient outcomes of —with care and in general hospital to assist them in further developing their ability to meet emotional needs of patients; concurrent with 96:231, continuation of 96:232, which is prerequisite.

96:295 Advanced Psychiatric Psychiatric Nursing III

6 a.h.

96:295 Clinical Nursing I

5 a.h.
Clinical nursing courses, concepts and practices; contemporary health care trends influencing clinical nursing; clinical case analysis with integrated clinical experi-
ence.

96:295 Clinical Nursing II

3 a.h.
Continuation of 96:295; prerequisite: 96:238.

96:290 Nursing-Social Service Administration I

3 a.h.
Administrative concepts and organizational theory to understanding complex nature of modern community hospital; small group discussions using case method of studying nursing administration.

96:291 Nursing-Social Service Administration II

3 a.h.
Functions of nursing department in complex hospital with special attention to planning, budgeting, staffing and control; group discussion of nursing administra-
tion cases and analysis of action alternatives; prerequisite: 96:290.

96:292 Nursing-Social Service Administration III

6 a.h.

96:295 Supervision in Nursing

3 a.h.
Supervision process in providing nursing care in health agencies.

96:295 Thesis

or.

art.
College of Pharmacy

Administrative Staff
Dean: Delia E. Wunstor
Dean Emeritus: Rudolph A. Gunner
Director, Pharmaceutical Services: William W. Tenter
Associate Director, Pharmaceutical Services: Susan E. Koon
Coordinator, Pharmacy Extension Services: Wandle L. Ker
Coordinator, Hospital Pharmacy Education: Douglas Hayler
Director, Hospital Pharmacy Services: Harold J. Black
Degrees offered: B.S., M.S., Ph.D.

Pharmacy is a physical science dealing with the preparation and dispensing of medicinal products. The pharmacist is also trained to identify, analyze, select, combine and standardize these medi-
cines and serve his or her community as a prime source of information on health topics.

Although he or she performs a variety of tasks in and out of the community pharmacy, the pharmacist is basically a specialist in the science of drugs. He or she must understand their composi-
tion, chemical and physical properties, manufacture and uses, and activity in the normal individual as well as in the ill patient, and he or she must be familiar with tests for the strength, purity and efficacy of drug products. The pharmacist is prepared to compound and dispense prescriptions written by health practi-
tioners. Prescriptions rely on the pharmacist for information about various drugs, their availability, activity, toxicology, contraindi-
cations, etc.

Nearly everyone is familiar with the community pharmacist and the pharmacy in which he or she practices. The size and type of practice vary—community pharmacies may be large or small, operated by individuals or by corporations. The pharma-
cists who staff these pharmacies make up the majority of practi-
tioners. Over 100,000 men and women practice in community pharmacies.

Another smaller group of pharmacists is employed in hospital pharmacy work. The government also employs pharmacists in the Public Health Service and the armed forces.

An area which has a growing need for pharmacists is industry. This includes pharmaceutical manufacturing, where pharma-
cists are found in various areas of research, development, manu-
facturing, control, marketing and advertising. In addition to these pharmacists, numerous others are pharmaceutical sales-
people. Pharmacy training is especially valuable to these men and women who are responsible for acquainting physicians, den-
tists, and others about the proper use of the medications prescribed.

In the United States more people are receiving total health care than ever before. This expansion of health care will con-
tinue. Young men and women in pharmacy will face new chal-
lenge, expanded responsibilities and an ever-increasing growth in health care activities. As increasing need for pharmacists is related to many factors. These include a longer life span; a greater demand for drugs, especially among the older age groups; a broader range of specific drugs for more diseases; greater interest in preventive medicine; higher standards of medical care; growth of health insurance and medical-care prepayment plans; federal health plans and federal support of health colleges; a burgeoning population; and greater demand for more physicians and dentists, hospitals, nursing homes and extended care facilities. These factors combine to point out the short-range prospects as well as long-range opportunities for pharmacists.

The College of Pharmacy has an enrollment of approximately 350 undergraduate majors. Approximately 60 graduate students are pursuing master's and doctor's degrees in the College.

With the colleges of Medicine, Nursing and Dentistry, the College of Pharmacy is an integral part of the University Health Center.

The 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.

The Bachelor of Science Program

In the College of Pharmacy students in the Bachelor of Science program receive professional training and education in a variety of fields, such as physical pharmacy, professional practice, indus-
trial pharmacy, biopharmaceutics (drug absorption), inorganic and organic medicinal chemistry, pharmacogony (chemistry and actions of drugs derived from plants and other natural sources), administrative pharmacy (pharmacy operations) and institutional pharmacy (clinical pharmacy and hospital phar-
mcy).

Basically, the Bachelor of Science program in pharmacy com-
prises one year of preprofessional study, taken in the College of Liberal Arts at Iowa or in any accredited community or liberal arts college, and four years of pharmacy study.

It is possible to transfer into the College of Pharmacy after two years of college-level work at an approved institution. A student entering the College after two years of preprofessional study can complete the professional program in three years if the preprofessional study includes, in addition to the basic pre-
professional requirements, at least eight semester hours in or-
genic chemistry, from five to eight semester hours in biology or zoology, three or four semester hours in economics, three semes-
ter hours in accounting and three to four semester hours in quantitative analysis.

The professional curriculum includes a minimum of 18 semes-
ter hours of electives. Through his or her choice of electives, the student may focus on such special areas as hospital pharmacy, industrial pharmacy or pregraduate study.

Graduation from the undergraduate program in pharmacy requires at least a 2.0 (C) cumulative grade-point average. Any student whose cumulative average falls below 2.0 is placed on academic probation; a student on academic probation is limited
to 12 semester hours of coursework. A student on academic probation for the third time is subject to review by the College's scholarship and admissions committee.

**Graduate Programs**

Master of Science and Doctor of Philosophy programs are available in administrative pharmacy, pharmaceutics, medicinal chemistry, pharmacognosy and industrial pharmacy. A Master of Science degree is available in hospital pharmacy. A special brochure of these programs may be obtained from the dean of the College of Pharmacy.

**Facilities**

The College of Pharmacy Building is centrally located on the University's main campus, in close proximity to the College of Medicine, University Hospitals, the Basic Sciences Building, a Health Sciences Library scheduled for 1970 completion and other units of the Health Center.

Completed in 1963, the Pharmacy Building is a five-story structure specially designed to provide the most advanced facilities for a comprehensive program of pharmacy education. In addition to classrooms, an auditorium and the pharmacy library, the building houses well-equipped separate laboratories and a greenhouse for instruction at the undergraduate and graduate levels in the various areas of specialization.

The College has an industrial pharmacy laboratory which serves as a teaching unit as well as a service division of the College. Here undergraduate and graduate students learn methods of large-scale pharmaceutical product development.

The Hospital Pharmacy in the University Hospitals is a teaching unit of the College of Pharmacy. From it, all medicines and related necessities are supplied to the General, Children's and Psychopathic hospitals. Pharmacy students are given laboratory and classroom experience in the clinical pharmacy program, under supervision of clinical instructors and hospital Pharmacy staff members, in all areas of the University Hospitals. Veterans Administration Hospital and the Oakdale installation. Here the students work with other health professionals and have the opportunity to identify drug therapy in hospitalized patients, under the supervision of clinical instructors in pharmacy and medicine.

**Admission**

For general University admission requirements and procedures, see the "Admission" or "Graduate College" sections of the Catalog.

**Undergraduates**

The college work outlined below meets the minimum academic requirements for admission to the College of Pharmacy:

- **Rhetoric:** eight semester hours; applicants from approved colleges may satisfy this requirement by presenting six hours of credit in English composition and rhetoric and two in speech, or by presenting eight hours of credit earned in a one-year rhetoric course.
- **Inorganic chemistry and qualitative analysis:** eight semester hours.
- **College algebra and trigonometry:** six to eight semester hours.
- **Physics:** eight semester hours; although physics is recommended, a suitable biology or zoology course can be taken instead; physics will then be taken in the first professional year.

Economics and accounting are suggested as additional courses to be included in pre-professional study.

Students who possess minor deficiencies in meeting the above requirements may be admitted to the College of Pharmacy upon recommendation of the director of admissions and the College of Pharmacy.

To be considered for admission to the College of Pharmacy, the applicant must have earned at least a 2.0 (A = 4) cumulative grade-point average on all college course work attempted.

**Transfer Students**

Students who transfer into the College of Pharmacy after two years in a community or liberal arts college can complete the pharmacy program in three years if they have satisfactorily completed courses in organic chemistry, biology or zoology, economics, accounting and quantitative analysis. Students who plan to remain in a community college for two years before transferring to the College of Pharmacy should consult the dean of the College of Pharmacy concerning course requirements.

**Transfer with Advanced Standing**

Students transferring from other colleges of pharmacy accredited by the American Council on Pharmaceutical Education receive credit toward the Bachelor of Science degree in pharmacy for satisfactorily completed coursework required in this curriculum. However, at least one academic year of residence in The University of Iowa College of Pharmacy is required for the degree (minimum 30 semester hours).

Students transferring from non-pharmacy colleges receive credit for work required in the Bachelor of Science curriculum in pharmacy, but are still subject to the licensure requirement of at least three years in an accredited college of pharmacy. A minimum grade of "C" is required for work applied by transfer toward the pharmacy degree.

**Expenses and Financial Aid**

For information about expenses, see "Admissions and Housing." For information about financial aid available to University students generally and to College of Pharmacy students only, see "Scholarships and Loans."

**The Professional Curriculum**

**First Year**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Courses</th>
<th>Hours</th>
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<tr>
<td>First</td>
<td>Pharmacology Calculations</td>
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<td></td>
<td>Organic Chemistry 1</td>
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<td>Principles of Animal Biology</td>
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<td>Quantitative Analysis</td>
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<td></td>
<td>Total semester hours</td>
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<td>Second Semester</td>
<td>46:14 Pharmacy: Orientation</td>
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<td>Second Semester</td>
<td>46:16 Pharmaceutical Chemistry: Inorganic</td>
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<td>Second Semester</td>
<td>41:12 Organic Chemistry II</td>
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</tr>
<tr>
<td>Second Semester</td>
<td>41:14 Intermediate Chemistry Laboratory I</td>
<td>2</td>
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<tr>
<td>or 6E:2</td>
<td>Economics</td>
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<td>or 6E:2</td>
<td>Elective</td>
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<td>Second Semester</td>
<td>Total semester hours</td>
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| Second Year | 46:23 Pharmacy: Solids | 3 |
| Second Year | 99:161 Biochemistry | 4 |
| Second Year | 61:157 Microbiology | 4 |
| Second Year | Elective | . |
| Second Year | Total semester hours | 14 |

| Second Year | 46:26 Pharmacy: Institutional Practice | 2 |
| Second Year | 46:28 Pharmacy: Solutions | 4 |
| Second Year | 6A:2 Accounting | . |
| Second Year | Elective | . |
| Second Year | Total semester hours | 15 |

| Third Year | 46:131 Pharmaceutical Chemistry: Organic | 3 |
| Third Year | 46:31 Pharmacy: Polyphasic Systems | 4 |
| Third Year | 72:151 Intermediate Mammalian Physiology | 5 |
| Third Year | Elective | . |
| Third Year | Total semester hours | 15 |

| Second Semester | 46:35 Pharmacognosy | 4 |
| Second Semester | 71:101 Pharmacology | 5 |
| Second Semester | 46:110 Clinical Pharmacy: Case Study | 2 |
| Second Semester | Elective | . |
| Second Semester | Total semester hours | 17 |

| Fourth Year | First Semester | 46:41 Pharmacognosy | 4 |
| Fourth Year | First Semester | 46:43 Pharmacy: Professional Practice | 3 |
| Fourth Year | First Semester | 46:45 Pharmacy: Administrative | 3 |
| Fourth Year | First Semester | 46:113 Clinical Pharmacy: Laboratory | 3-4 |
| Fourth Year | First Semester | 71:103 Pharmacology and Toxicology | . |
| Fourth Year | First Semester | Total semester hours | 15-17 |

| Second Semester | 46:64 Pharmacy: Professional Practice | 3 |
| Second Semester | 46:46 Pharmacy: Administrative | 3 |
| Second Semester | 46:52 Pharmacy: Senior Seminar | 1 |
| Second Semester | 46:112 Clinical Pharmacy: Laboratory | 2-4 |
| Second Semester | 91:130 Law in a Technological Society | 2 |
| Second Semester | Elective | . |
| Second Semester | Total semester hours | 14-16 |
null
College of Pharmacy

Product on market; coordination between research and development emphasized; prerequisite: consent of instructor.

46109 Pharmacy Administration: Pharmaceutical Economics and Marketing (4) 4.a.
Economic and marketing environment of pharmaceutical industry analyzed; computer techniques, elasticity of demand, real, marketer marketing and other factors influencing pharmaceutical economics and marketing discussed. Consent of instructor required. Prerequisites: Governmental investigation of the industry, pre-46112, consent of instructor.

46110 Pharmacy Administration: Seminar 0-1 h.
Assignments and discussions of recent matters in pharmacy administration; may be repeated.

46114 Pharmacy Administration: Seminar 0-1 h.
46115 Pharmacy Administration: Research 0 cr. arr.
46122 Pharmacy Administration: Research Methods 2 h.
Scientific methods to solution of problems in pharmacy administration discussed; research problems, design and relations between two emphasized; prerequisite: satisfactory completion of 56113 or equivalent; prerequisite: Education 7424 or Economics 56112.

46124 Pharmacy Administration: Health Economics 3 h.
Analysis of supply and demand of health resource and influence of third-party payment on medical care utilization discussed; cost-benefit analysis of health programs and measures; utilization in health insurance explained; pharmacy considered in its relationship to health care systems.

Undergraduate Industrial Pharmacy

46110 Industrial Pharmacy Survey 3 h.
Lectures: principles and processes of pharmaceutical manufacturing—regulations governing. In: pharmaceutical production equipment; laboratory procedures on a pilot-plant scale. Open to undergraduates for elective credit. Prerequisite: 46110.

Graduate Industrial Pharmacy

46114 Industrial Pharmacy: Survey 3 h.
Organizations, challenges and cost operations in production of pharmaceuticals; prerequisite: 46110. Explained by pertinent laboratory work, literature reading, lectures and conferences; problems incident in production of pharmaceutical preparations on industrial scale comprehensively studied. Prerequisite: satisfactory completion of one laboratory course, three to five hours, and laboratory hours per week.

46121 Industrial Pharmacy: Product Development 2 h.
Application of physical and physiologic principles to formulation and design of pharmaceutical products; work on actual experience and one laboratory per week.

46122 Industrial Pharmacy: Product Development 2 h.
Consent of instructor.

46125 Industrial Pharmacy: Product Development 2 h.
Application of physical and physiologic principles to formulation and design of pharmaceutical products; work on actual experience and one laboratory per week.

46126 Industrial Pharmacy: Research 0 cr. arr.

46128 Industrial Pharmacy: Research 0 cr. arr.

46130 Industrial Pharmacy: Research 0 cr. arr.

Undergraduate Clinical-Hospital Pharmacy

46136 Pharmacy: Institutional Practice 2 h.
Lectures devoted to role of pharmacist in institutional setting (small hospital, extended-care facility and nursing home) primarily from viewpoint of community pharmacy. Policies and procedures of practice, institutional organizations, laws and regulations, federal and state health programs, drug distribution and control, pharmaceutical economics, pharmacy services, management, formulary, drug information services and educational programs.

46140 Clinical Pharmacy: Case Study 2 h.

46141 Clinical Pharmacy: Laboratory 2 h.
Application of basic sciences in pharmacy practice through clinical and supervised practice in dermatological pharmacy and mental pharmacy. Literature, conferences, lectures. Duration unknown. Third and fourth years served by teaching additional clinical experience course. Prerequisite: 46110.

46142 Clinical Pharmacy: Laboratory 2 h.
Continuation of 46141; third and fourth years served by teaching additional clinical experience course.

Graduate Clinical-Hospital Pharmacy

46107 Hospital Pharmacy Seminar 3 h.
Hospital as art of American health-care system: financing, planning, operation, legislation, organization and management; with particular attention to pharmacy organization, staffing and operating; hospital pharmacy; particular emphasis on economy of personnel, efficient tactics and common laws; prerequisite: consent of instructor.

46108 Hospital Pharmacy Survey 3 h.
Continuation of 46112; emphasis on hospital pharmacy relations; pharmacy committees, formulary, special aspects of hospital drug procurement, pharmacy and practice of pharmacy and clinical pharmacy in drug utilization review, drug information services; planning and design; budgeting. This may be taken as an elective course. Prerequisite: consent of instructor.

46113 Hospital Pharmacy: Special Topics 2 h.
Topics of interest to pharmacy 46107, 46108.

46120 Hospital Pharmacy: Seminar 1 h.
Topics of current interest in the specialty of hospital pharmacy may be required for completion. Prerequisite: consent of instructor.

46121 Hospital Pharmacy: Seminar 0 or 1 h.

46128 Hospital Pharmacy: Administrative Problems 3 h.
Application of basic sciences and administration in hospital pharmacy; management, budgeting and forecasting, systems and physical plant design; prerequisite 46108. This may be taken as an elective course.

Required Courses from Other Departments

4111 General Anatomy and Embryology 4 h.
4120 Organic Chemistry I 4 h.
4121 Organic Chemistry II 4 h.
4133 General Chemistry I 4 h.
4141 Intermediate Chemistry Laboratory I 4 h.
4142 Intermediate Chemistry Laboratory II 4 h.
4611 Principles of Economics 3 h.
2611 College Physics 1 4 h.
2612 College Physics 2 4 h.
573 Principle of Animal Biology 4 h.
81157 General Microbiology 4 h.
81199 Pharmacology 4 h.
71161 Pharmacology 1 4 h.
71166 Pharmacology 2 4 h.
80161 Concepts in Immunology 4 h.
98181 Biochemistry 4 h.
The University recognizes that creative activity is an indispensable function if its teaching is to have the reference, freshness and effectiveness expected of a distinguished institution of higher learning.

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

The Office of the Vice-President for Educational Development and Research maintains an overview of the many individual research commitments of the institution and initiates continuing studies of the nature, extent, requirements and results of the University's research effort. This office has an interlocking relationship with the Graduate College, because of the all-University character of the College and the close connection between the graduate programs and research and creative activity.

The University Research Council assists the Vice-President for Educational Development and Research in a regular advisory capacity. The Council consists of nine faculty members, with widely recognized personal involvements in basic research or creative activity. Members include two each from the physical, biological and social sciences and the humanities; and one from the faculty at large. The Council gives regular consideration to such matters as the establishment of general policies with respect to the University's research and creative efforts, the review of policies and procedures concerned with securing and allocating funds for support of research and creative activity, and additional matters related to the general research and creative functions of the University and the health of basic scholarship on the campus.

Programs
With the advice of the University Research Council and other appropriately involved officers and committees of the University, the Office of the Vice-President for Educational Development and Research currently supports the following programs:

Faculty Research Assignments
Under the rules of the State Board of Regents, a faculty member may be assigned to devote full time to a specific research or creative project for a semester. Appointments may be for either the first or second semester.

Old Gold Summer Faculty Research Fellowships
These fellowships provide an opportunity for faculty members to devote full time to research or creative work during the summer months. The program is designed to give support to work that will result in additions to knowledge or in substantial progress in creative activity. Awards are given for the initiation of a project, the continuance of its progress or its completion.

Junior Faculty Health-Related Research Grants
These grants are made to support the initial research efforts of junior faculty (i.e., below the rank of associate professor), other than those in the colleges of Medicine and Dentistry, who wish to do health-related research. Funds for these grants come from an institutional award made annually to the University by NIH.

Computer Project Grants
These grants are awarded several times a year to support innovative and extraordinary use of the computer. Any member of the faculty, staff or student body is eligible to apply.

Incidental Grants
Limited funds are also available in the Office of the Vice-President for Educational Development and Research for small grants to faculty members to cover the costs of materials, supplies, equipment and clerical and related assistance for specific research projects for faculty travel related to specific research projects or for the purpose of acquiring skills, knowledge or techniques which will enhance research at the University; for the purchase of specialized equipment for use in specific research projects; and for honoraria and expenses of visiting lecturers.

Services
The Office of the Vice-President for Educational Development and Research also provides support for several University-wide services required by the research and creative activity of the faculty. They include:

University Computer Center
The role of the Computer Center is to provide large-scale, general-purpose computing facilities to all faculty members and students of the University for instruction and research purposes. The Center has a system capable of an extremely wide variety of applications. The computer is used in remote batch processing in connection with a regional computer activity partially funded by the National Science Foundation, involving several colleges in Iowa and Illinois. Conversational programming by way of typewriter terminals is also available. Although the Center is a distinct entity from the Computer Science Department, there is an interchange of students, faculty and ideas between the two staffs. The Center provides educational and consultative services, compatible with its resources, to help users prepare projects for computer analysis.
Research Activities

University Scanning Electron Microscope Laboratory
This laboratory was established in September 1971 to provide facilities and technical assistance to research programs involving the use of a scanning electron microscope (SEM). Located in the Zoology Building, the laboratory is equipped with a Cambridge Stereoscan S4 having a resolution of 130 Å and a useful magnification range of 30 to 50,000 diameters; a vacuum evaporator for specimen coating; and a critical point drying apparatus for biological tissue preparation. These facilities are available to all interested graduate students and faculty in the University.

Office of Research Services and Administration
This office maintains a resource library of information on public and private agencies which provide funds for research and study. Included are references to pre- and post-doctoral fellowship awards, as well as application forms when available. After a potential funding agency is located, staff is available to assist in the preparation of grant and cover materials and to give editorial assistance to achieve effective organization and technical correctness of an application. The staff also assists in processing an application through the University and in locating the appropriate contact in the prospective donor’s office. Once an award is made, monitoring and advisory services are provided for matters other than expenditure accounting.

Office of International Education and Services
This office assists students and faculty wishing to explore research and education opportunities in overseas locations. See “Other Service Units.”

Related Units
Although not directly connected with the Office of the Vice-President for Research, these units have a special role in the conduct of research at the University:

Agricultural Law Center
See “College of Law”

Center for the Advanced Study of Communication
See “Journalism” in “College of Liberal Arts”

Center for East Asian Studies
See “East Asian Languages and Literatures” in “College of Liberal Arts”

Center for Labor and Management
See “College of Business Administration”

Center for Research in Interpersonal Behavior
See “Sociology” in “College of Liberal Arts”

Child Development Clinic
The Child Development Clinic is an out-patient facility and is a division of the Department of Pediatrics in the University Hospitals. The primary role of the Clinic is as a diagnostic clinic for developmental problems in children. The Clinic will provide a comprehensive study on any child under 17 years who has problems suggestive of mental retardation, problems associated with poor school performance or psychological problems associated with medical conditions.

Clinical Research Center
The Clinical Research Center is a 17-bed unit in University Hospitals. Its functions are to provide the setting for patient-oriented research of disease processes and to permit studies of normal human physiology, biochemistry and pharmacology. The Center is supported completely by the National Institutes of Health, on a semi-permanent basis, by annual grants-in-aid.

Comparative Legislative Research Center
The Comparative Legislative Research Center conducts programs of research on legislative behavior with special emphasis on the role of legislatures in political development. It provides research training for graduate students and foreign research associates and facilitates collaborative research projects jointly undertaken by faculty at The University of Iowa and by foreign scholars.

The Institute of Agricultural Medicine
The Institute of Agricultural Medicine, housed in the Agricultural Medicines Research Facility on the Guild Hall Campus, is a part of the Department of Preventive Medicine and Environmental Health, College of Medicine. Research, teaching and extension activities are centered on the safety and health problems of those who live in rural Iowa by occupation or choice. The Iowa Community Parasite Study and Accident Prevention Laboratory are portions of the Institute.

Institute of Hydraulic Research
See “College of Engineering”

Institute of Public Affairs
The mission of the Institute is to improve state and local government and administration in Iowa. To fulfill this mission, the research and publication activities of the Institute seek to promote citizen understanding of and appreciation for their governments, help public officials better understand their roles and responsibilities, assist governments in their personnel development activities, and help public officials and citizens in their efforts to implement change. (See “Extension and University Services”)

Institute of Urban and Regional Research
Primary objectives of the Institute are to broaden knowledge in
the area of urban and regional studies, to enrich the teaching programs in participating departments and to initiate and carry out interdisciplinary research projects. Through the acquisition of grants and contracts and other on-campus activities, the Institute pursues these goals and provides an interface between fac-
ulty and students and their related discipline orientations in both basic and applied urban and regional research activities.

**Iowa Center for Education in Politics**

Supported by gifts from foundations and others and headquartered in the Division of Extension and University Services, the Iowa Center for Education in Politics coordinates activities at all colleges and universities in Iowa. In encourage students to become active in political affairs. The Center also sponsors programs to help teachers improve their teaching about politics at the high school level. These programs are planned in cooperation with leaders of the legally-recognized political parties of the state and college teachers and administrators.

**Iowa Center for Research in School Administration**

The Iowa Center for Research in School Administration serves local school districts on a membership basis. Services to schools include data gathering and reporting, research reports and special reports. Contract work encompasses computer scheduling, mark and attendance reporting, equipment accounting, school surveys and other projects defined by school districts. Developmental activity in educational management systems is coordinated at the Center. The staff includes graduate students and specialists with University professors as supervisors.

**Iowa Center for Toxicology and Biochemical Pharmacology**

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

**Iowa Lakeside Laboratory**

See "Extension and University Services"

**Iowa Urban Community Research Center**

The Iowa Urban Community Research Center was established in 1958 as a permanent interdisciplinary research and training agency. Its research has been disseminated in scholarly journals and in a reprint series and monograph series. The Center's community surveys are on tape in its data bank and are readily available for research analysis by graduate students and fac-
ulty. The staff is currently engaged in a study of the economic absorption and cultural integration of minorities in an industrial community.

**The Laboratory for Political Research**

The Laboratory for Political Research is a research and training facility for the Department of Political Science. It provides techni-
cal assistance to faculty members engaged in research. This assistance includes both the data collection and analysis phases of research. It is involved in graduate education, directly training students to utilize the computer in their own research. It also provides empirical data that can be used in graduate courses and seminars. For undergraduate education the Laboratory works with professors in developing curriculum materials which utilize empirical data and the computer for instructional purposes.

**Neuroscience Center**

The Neuroscience Center is supported by the National Institute of Health under a program-project grant. The Center sponsors research projects on neurology and neurosurgery and is administered by these departments. The intimate relationship of the eye and its innervation with the central nervous system provides the basis for collaborative stud-
ies. Special emphasis is given to speech disorders resulting from brain disease and to defects in hearing and visual sensation secondary to disorders of the nervous system. Projects which provide histological and chemical correlations if disorders of the nervous system are also sponsored.

**Radiation Research Laboratory (Radiation Biology)**

Effects of ionizing radiation and utilization of radiation in bio-
logical and medical investigations are the concern of this labora-
tory. Cancer cells, as well as normal ones, are studied, regarding kinetics and radioactivity. M.S. and Ph.D. programs are help-
ful for those preparing for science, radiobiology, health physics, radiological physics, cancer research, etc. The Laboratory's intro-
ductive course deals with radiation physics, radiation effects and uses of radiocroper. It is open to advanced undergraduate students who may plan to enter medicine, nuclear medical techn-
ology or similar programs.

**The Social Science Data Archive**

The Social Science Data Archive is a library of empirical data that can be re-analyzed by both faculty and students in their research and training. Approximately 250 studies are now in-
cluded in the Archive, covering most of the social science disci-
plines. In addition the Archive supports a large number of computer programs that can be used for data analysis. Those wishing assistance in utilizing the data of the Archive or com-
puter programs supported by the Archive can call on the person-
nel of the Archive.

**Transportation Safety Research Center**

The Transportation Safety Research Center was organized in 1968 to provide a focalpoint for research in transportation safety matters. Its primary mission is to stimulate and conduct this research through utilization of the vast resources at the Univer-
sity. Examples of activities, other than research, are the develop-
ment and conducting of a traffic engineering education program, and the organization and conducting of the Governor's Highway Safety Conference. TSRC serves as a catalyst for transportation safety activities.
The Extension Division was established by special appropriation of the General Assembly of Iowa to "render a large service to the Commonwealth and to the people of Iowa by carrying out to every part of the State the knowledge, the ideals and the spirit of the several departments and colleges of the University and by bringing the University generally into direct contact with the citizen." The Division shares and cooperates with many other parts of the University in this larger service to the people of Iowa. Moreover, it performs several other functions, some of which are campuswide and others of which are both campuswide and statewide. The Division’s organization and services include the following:

Bureau of Instructional Services

Correspondence Courses

Correspondence courses are available to students who want to earn credit toward a degree at The University of Iowa or at some other college or university and to those who wish to enroll for the satisfaction of special requirements for professional advancement, for preparation for special occupations or for self-improvement.

Resident students at The University of Iowa must obtain the permission of the dean of their college to enroll in a correspondence course.

Students who do not want credit toward a degree at The University of Iowa are permitted to register for any correspondence course in which they have an interest and sufficient preparation to enable them to do the work of the course. Approval by an official advisor of the college in which the student is enrolled is recommended for each such registration if degree credit is to be allowed.

An enrollment fee of $4.00 is assessed each new student. The course fee is $17.00 per semester hour for all enrollments. Fees are payable at the time of registration.

Departments offering courses by correspondence study include Accounting, Anthropology, Business Administration, Chemistry, Classics (Latin), Drawing, Economics, Education, English, Geography, History, Home Economies, Journalism, Library Science, Mathematics, Music, Physical Education, Political Science, Psychological Science, Psychology, Religion, Romance Languages (French, Spanish), Social Work, Sociology, and Speech Pathology.

Armed Forces Institute Courses

The University of Iowa, in cooperation with the Department of Defense, through the United States Armed Forces Institute, offers many correspondence courses at reduced rates to men and women in the armed services. The plan provides that the student pay only an enrollment fee and the cost of test materials.

Veterans Administration Courses

Veterans may enroll for correspondence courses under Public Law 650. The Veterans Administration provides for the payment of course fees, without any allowances for subsistence or books and supplies.

Education for Veterans

The Veterans Readjustment Benefit Act of 1966 includes provisions for educational benefits under the Educational Assistance for Veterans and Inservice Personnel.

Extension Classes

A limited number of extension classes is offered off campus in Liberal Arts, Business Administration, Education and Engineering. Classes are scheduled at the request of public school officials, or where professional groups and industry indicate a specific need for educational services. Courses offered in Business Administration and Engineering are scheduled on a contractual basis, whereas courses in Liberal Arts and Education, although scheduled on request, require a minimum of 20 enrollees to be officially started.

European Studies Program

Coursework for credit is offered to interested students abroad.

The Saturday Class Program

This Program serves part-time students on the Iowa City campus, with credit and noncredit course offerings open to undergraduates, graduates, or unclassified students at a tuition rate of $30.00 per semester hour. Courses are offered from all schools and departments of the University. Through this office, a program of continuing education, University Studies for Women, is currently being developed.

Adult Education Advisory Service

This Service within the College of Education provides consultative and guidance service on the problems of adult education programs with respect to organization, technique, subject matter, and other aspects of continuing education in the community.

Audiovisual Center

The mission of the Audiovisual Center is to assist in the improvement of the teaching-learning process through the effective use of educational media. Services and facilities available to University faculty, staff and students include:

Media Development

A staff of media consultants is available to assist faculty members
and students in the solution of their instructional problems related to the planning and design of learning systems, facilities and media. Short-term assignment to the Audiovisual Center of faculty, graduate or graduate assistant status is encouraged. All Audiovisual Center staff are available for advice on specific media needs and problems.

### Media Library

Major collections of 16mm motion pictures and magnetic tape recordings, as well as limited collections of slides, filmstrips, disc recordings and overhead transparencies, are available through the Media Library. Catalogs of materials are published periodically. Systematic additions to these collections are made according to requests and funds available. No charge is made for films used in classroom and other curriculum-related activities. A nominal fee is charged for off-campus use of these films. Tapes are obtained at a nominal charge for materials and duplication.

### Campus Service

Audiovisual equipment available for use includes film, slide, filmstrip, opaque and overhead projectors; audio tape recorders; record players; portable videotape recorders; portable public address systems; and display devices (exhibits, panels, boards). For classroom and other curriculum-related activities equipment is provided at no charge. There is a nominal charge for off-campus equipment and projectionist service.

### Media Production

A staff of production technicians and artists is complemented by the facilities and equipment used to produce materials which include graphs, charts, maps, slides, layout, posters, illustrations, models, exhibits and overhead transparencies; black and white and color photographs, negatives, microfilms, slides, portraits, microphotography, motion pictures, videotapes, filmstrips, production scripts, narration and audio tapes. Still photographic and motion picture printing and processing laboratory services are available. Certain equipment is available for loan. Reasonable and competitive charges are made for production materials and services.

### Satellite Centers

Satellite centers are established as needs arise through cooperative arrangements between the Audiovisual Center, department, schools, colleges and other service agencies. Currently there are: the Medical Audiovisual Center, Dental Audiovisual Center, the Educational Media Laboratory and the Music Audiovisual Center.

### Radio Broadcasting Services

WSUI and KUIS-FM serve the interests and needs of the people of eastern Iowa with a broadcasting service which extends the resources and activities of the University. The broadcast schedule consists of educational, cultural and informative programming not available elsewhere. As an affiliate of National Public Radio, WSUI contributes program materials to a national network of more than 100 noncommercial radio stations.

## Center for Conferences and Institutes

The Center serves as the principal agency of the University for developing, coordinating, conducting and supporting continuing educational programs on campus for nonresident adult groups.

### High School Debating and Public Speaking

In cooperation with the Department of Speech and Dramatic Art, the Division sponsors cross-examination debate, extemporaneous speaking, original oratory, dramatic interpretation, oral interpretation, news commentary on radio, exposition speaking on television and student senate activities among high schools of the state; assists schools in the collection and distribution of materials from national agencies; and conducts debates and contests.

### Drama Conferences

In cooperation with the Department of Speech and Dramatic Art, the Division conducts an annual drama conference in the fall for high school students and teachers. Community drama conferences, workshops and consulting activities are conducted throughout the state.

### Bureau of Educational Research

Standardized tests and scales developed through research by staff members and graduate students at The University of Iowa are published and distributed on a nonprofit basis to schools, public agencies and industrial firms in the State of Iowa and throughout the nation. In addition, many other widely-used, commercially-produced standardized tests and scales with established national reputations are carried in stock for distribution, in most cases at the publisher's list price. Buyers order test supplies from one source to save time and transportation costs. Orders received for items regularly carried in stock are usually shipped within 24 hours. Items not carried in stock are furnished at a special service at a carrying charge above the publishers' price.

### Service to Adult Education Groups

The Division seeks to aid state and local associations, organizations and clubs in the planning, preparation and conduct of their programs and services.

### Department of Publications

The Department is responsible for the production of all printed material prealed for the University. The Publications staff provides assistance to departments and campus organizations in planning, editing and designing copy. Printing Service is the production agency of the Department, with a printing plant and five Copy Centers located strategically about the campus for quick, inexpensive reproduction service. Campus Stores is an on-campus distribution agency which sells manuals, lab notebooks and other special instructional materials.

### The University of Iowa Press

The University of Iowa Press is the agency of the University established to publish the significant results of scholarly re-
search. The imprint is controlled by the University Editorial Board, composed of faculty members appointed by the vice-president for research and dean of the Graduate College, who serves as an ex officio member of the Board. The director of publications for the University also serves ex officio on the Board and directs the operation of the Press.

Iowa Lakeside Laboratory
The Division has general administrative supervision of the Iowa Lakeside Laboratory, a summer laboratory for the biological sciences on Lake Okoboji. A cooperative program in teaching and research is carried on under the auspices of Iowa State University, University of Northern Iowa and The University of Iowa. Two terms of five weeks each are held during June, July and August. Facilities for year-around research are available.

Macbride Field Campus
The University holds a lease from the U.S. Army Corps of Engineers on two tracts of land in the Coralville Reservoir north of Iowa City. The two tracts total approximately 630 acres. One tract is reserved for biological research, the other for University-wide activities. Developments in the area to date include provision of an access road, water supply, electric power, maintenance storage facilities, a boathouse and sailing facilities, field archery course, facilities for handicapped persons and picnic area.

Institute of Public Affairs
This agency serves as a research and training link between the University and public officials and units of government on the local and state levels in Iowa. Through the Institute, related areas of the University and their research facilities are brought in contact with the problems faced by public officials in the state. The Institute maintains a full-time research and training staff.

A close cooperative relationship exists between the Institute, the League of Iowa Municipalities and similar organizations of public officials.

Publications of the Institute include handbooks for various groups of governmental officials, as well as the results of research studies and surveys concerning specific governmental problems.

Short courses and intensive training programs for government officers are held on the University campus and other locations.

Bureau of Police Science
The Bureau offers a series of law enforcement courses through correspondence study. In addition, the Bureau offers a variety of services to law enforcement agencies, including entrance and promotional examinations, general administrative or specialized surveys, and specialized training programs. It also carries out research programs in areas of public safety. Upon request by law enforcement agencies, the Bureau conducts personnel examinations, administrative surveys and record surveys.

Iowa Center for Education in Politics
The Division serves as the headquarters of the Iowa Center for Education in Politics. (See "Research Activities.")

Iowa Community Services
The Division serves as administrative and fiscal agent for Iowa Community Services, a cooperative state-federal program to expand the continuing education services of colleges and universities toward solving community problems. A state advisory council assists in identifying community problems and recommending programs and activities which will assist in solving those problems and approves programs submitted by colleges and universities in Iowa. The program was authorized by the U.S. Congress in Title I of the Higher Education Act of 1965.

Office of Community College Affairs
The Office of Community College Affairs is closely aligned with the Division of Higher Education and the College of Education. The Office's purpose is to promote articulation between Iowa's area community colleges and vocational technical institutions and The University of Iowa. In those activities involving discipline articulation, the Office extends its activities to the private two- and four-year colleges in the state. Regional and national activities of approval, accreditation and consultation often extend this jurisdiction beyond state lines.
Health Affairs
In addition to the colleges of Dentistry, Medicine, Nursing and Pharmacy, numerous University programs and agencies offer health services to students, the community and the state.

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

The Bureau's primary purpose is to promote a program of dental health education in the public and parochial schools of the state. The present program of the Bureau, known as the Iowa Plan for Dental Health Education, embodies three objectives: dental health education, the prevention of dental disease and the correction of dental defects. As a means of accomplishing the educational objectives, authoritative material is developed and provided to the classroom teacher. The preventive aspect of the program is emphasized through home participation in a routine program of oral hygiene and correct dietary habits. The corrective phase is stressed through the use of dental referral cards. Referral cards encourage systematic and regular examinations in a dental office where the completion of the necessary work is recommended.

Direct Health Services
Located on the University campus and carefully integrated in its program are five major health units of the University of Iowa which render direct health services to the people of the state. Each is supported by appropriation from public funds, and each devotes its major effort to the provision of service. However, to the extent that the provision of the service may also add to the preparation of special teaching, these service organizations are integrated in the University program. They are administered under the general University organization.

University Hospitals—Medical and surgical treatment of patients referred by physicians
Psychopathic Hospitals—Care, treatment and maintenance of committed and voluntary patients
State Hygienic Laboratories—State bacteriological laboratory service to city, county and state governments, physicians and others
University Hospital School—Evaluation, management, special education and research pertaining to physically handicapped and mentally retarded children; (see University Hospital School)
Oakdale Hospital—Treatment of tuberculosis and rehabilitation of patients with other chronic diseases

Iowa Mental Health Authority
Federally funded under the Public Health Service Act (P.L. 79-437), the Authority is under the local supervision of the Board of Regents, but has its own policy board, the Mental Hygiene Committee, established under Iowa Code. Located at Psychopathic Hospital, the Iowa Mental Health Authority is the central administration for Iowa's 24 community mental health centers, which provide local services for 78 percent of the Iowa population. The centers are private nonprofit corporations.

The Authority provides consultation on federal construction grants and staffing grants. It maintains an audiological and speech-slur service which provides free educational materials throughout the state. Consultation, staff development, recruitment, standards and research are provided to Iowa's mental health centers. The Authority consults with communities about developing local services and performs liaison and planning activities with other local, state and federal programs in the mental health delivery system.

University Hospital School
The University Hospital School includes a residential service program for physically handicapped children and a day-school program for mentally retarded children. Its unique function under a University administration provides numerous training opportunities for University students, and broadened possibilities for investigative endeavors. Two sections operate as one administrative unit within this program.

The Children's Rehabilitation Section provides treatment and education for children whose physical handicaps make it impractical for them to attend their local school. The objective of this care in the University Hospital School is to rehabilitate each child sufficiently through special treatment and education so that eventually he may return to his home community for continued education and treatment. Residential care is provided. Age range extends to 21 years. Approximately 60 children receive inpatient services at a given time.

A comprehensive program of special management for the child is available in the fields of medical, dental and nursing care; communication skills; various therapies; special education; physical education; industrial arts; homemaking; music; and religious activities. An admittance and thorough initial evaluation and periodic rechecks of handicapped children are provided on an outpatient basis prior to admission to this section. Through this activity it is intended that parents may be given pertinent instructions regarding the care of their child at home. An attempt is made to give attention to all of each child's problems, as far as possible.

The Pine School Section has as its main functions educational research, teacher training and community service. Classroom
instruction is provided by means of special education for selected preschool and elementary school children who are mentally retarded and living in the Iowa City area. The children's schedules include physical education, music, homemaking, industrial arts and organized recreational activities. Attendance in the Pine School Session is on a day basis only. These children live at home and are transported daily to and from the University Hospital School.

Additionally, three other programs are housed in this University Hospital School complex: the office of State Services for Crippled Children; the Child Development Clinic of the Department of Pediatrics, serving as an outpatient diagnostic and guidance service in the field of mental retardation; and the Children's Research Unit, undertaking investigative work relative to the child who has suffered neurological damage and mental retardation, either singly or combined.

Training opportunities for prospective workers, particularly for graduate students, are afforded in most aspects of these aforementioned programs. Part-time positions and graduate assistantships are available to students from various colleges in the University. Supervised experience is offered in the fields of special education, child welfare, speech pathology, occupational therapy, physical therapy, physical education, social work, music, nutrition, nursing, medicine, homemaking and some other areas.

State Services for Crippled Children

Crippled Children's Services are supported by federal appropriations through the United States Department of Health, Education and Welfare and by state appropriations through the University Hospitals and the University general fund. The purpose of these services is to provide facilities for diagnosis, treatment for selected cases and assistance in planning for home and local care for crippled children. Services are available to children under the age of 21 years.

Diagnostic field clinics are conducted annually in communities throughout the state and on the University's Outpatient Campus. Medical examiners at the field clinics are staff members in the departments of Pediatrics, Orthopedic Surgery, Otolaryngology and Internal Medicine. Diagnostic services are also provided in the areas of speech pathology, audiology and clinical psychology.

Special care programs are operated for children who have rheumatic fever, cystic fibrosis, phenylketonuria or muscular dystrophy. There are research and care programs for mentally retarded and multiply handicapped children, and premature and other high-risk infants.

Field workers in public health nursing, physical therapy and medical social work provide follow-up care for crippled children who have been examined at diagnostic field clinics or in departments at the University Hospitals.

This agency subsidizes a graduate training program in audiology and speech pathology within the University, and other special training programs for University staff members.

Reading Clinic

The Reading Clinic, a teacher-training unit within the College of Education, provides a diagnostic and corrective service for school children having reading difficulties.

Council on Speech Pathology and Audiology

The Council coordinates clinical services in speech pathology and audiology offered in the Department of Speech Pathology and Audiology, Department of Otolaryngology and Maxillofacial Surgery, University Hospital School, State Services for Crippled Children and the Veterans Administration Hospital.

Other Service Units

Museum of Natural History

To meet the needs of the general public and the various departments of the University, the Museum provides a repository and the proper care for specimens which come to the University either by gift or through the efforts of its own collectors. It designs and executes new exhibits of educational value and offers instruction in the conceptual and technical phases of exhibit preparation and the general operational procedures of small science museums.

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

A large and well-known bird habitat exhibit is the Yellowstone Island Columbidae. This is a complete representation of a bird island of the Hawaiian group. Other habitat exhibits include The Bering Sea, the Louisiana Swamp, The Full Migration and Covese 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.

Ethological exhibits in the Museum present materials from many parts of the world. Indian and Eskimo materials, including beadwork and carved ivory received in the late nineteenth century, are exhibited.

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

Office of International Education and Services

Combining the responsibilities of several widely-dispersed offices, the new (1971) Office of International Education and Services (OIES) is the focal point for all University international activities, resources and interests.

The OIES helps foreign students and professionals with immigration, employment and academic questions and has hosted to short term foreign visitors sponsored by such groups as the State Department and AID.

The International Center is an integral part of the OIES cultural and educational program for students, faculty, staff and community individuals and groups.

The OIES advises American students of opportunities to work, travel and study abroad. Faculty members can seek OIES advice and assistance with grants and fellowships involving foreign or international perspectives. The OIES is the campus Fulbright advisor for both graduate and faculty awards, as well as
for the International Research and Exchanges Board (IREF).

The OIES takes an active interest in promoting cooperation between the various aspects of international studies—foreign language and area programs, comparative studies, foreign language departments and technical assistance projects.

The Office of Public Information and University Relations, University News Service

The Office of Public Information and University Relations and its affiliated University News Service seek to foster understanding, within the University community and generally, of the University's aims and activities.

The Office of Public Information and University Relations publishes Spectator, Faculty Newsletter, Staff Newsletter and the University Operations Manual; provides campus maps and other services for University guests; prepares displays and exhibits; provides copy and photos for a number of publications; assists groups seeking University speakers; and provides public service programs for Iowa radio and television stations.

University News Service supplies University news and information to mass media, gathers and prepares informative material for special and general interest periodicals, helps prepare special University publications, answers requests for information and helps writers, photographers, and broadcasters who visit the campus.

Public Information and News Service personnel also help plan and promote campus events.

Two News Service staff members work exclusively with the various University health science departments and agencies to aid public understanding of University activities in medicine and allied fields. The Sports Information Service responds to media needs for information about the University's intercollegiate athletic programs.

University News Service also conducts a public information internship program to provide working experience for graduate students anticipating careers in specialized writing or public relations for higher education. Other students work or observe in the various OPI offices from time to time, in cooperation with the School of Journalism's practicum program.

U of I Alumni Association

The principal agency through which Iowa students continue their identity with the University after they leave campus is the University of Iowa Alumni Association. Organized in 1867, the Association's current membership includes graduates and former students throughout the world.

The Association's continuing objectives are to identify alumni with the University; to strengthen public recognition of the University as an institution vital to the stability and welfare of the state and the nation; and, through organized alumni effort, to serve the University in strengthening its programs in teaching, research and public service. The Association publishes the Iowa Alumni Review, a bimonthly magazine for Association members.

The University of Iowa Foundation

The University of Iowa Foundation is organized to help the University obtain the greatest possible benefit from private giving. A private nonprofit corporation, the Foundation raises funds to help the University in reaching its educational objectives through three major programs: annual giving, capital campaigns and planned or deferred giving.

Organized in 1956, the Foundation has been empowered to solicit and receive gifts and bequests; to accept trusts subject to the conditions imposed thereon; and to hold, administer, manage, use or distribute gifts, bequests and trusts, all for the benefit of The University of Iowa. As a private corporation, its investment policies are less restrictive than the public policies which govern the University itself. The Foundation is constantly at work to provide more funds for scholarships, fellowships, student loans, library acquisitions and faculty research grants.

Annual Giving

Each year alumni and friends of the University make many thousands of gifts through the Foundation for a great variety of purposes. Their combined effort upon the strength of the University is very great, and the superiority of a number of the University's programs is largely owing to the annual financial support of its alumni and friends.

Capital Campaigns

The Foundation also conducts campaigns to raise capital funds for special needs on campus. Two of such campaigns in recent years supported the construction of the Health Sciences Library and the Museum of Art. Funds for such projects come from many sources and are the results of efforts of many people concerned with the University's welfare.

Planned and Deferred Giving

Individual financial situations vary a great deal, and finding financially sound giving programs for individuals is another service of the Foundation. Such efforts include both publications and consultation. The Foundation also acts as trustee of many trusts for the ultimate benefit of the University.

Ofice of Facilities Planning and Utilization

The office serves in direction and coordination of the planning and use of University buildings and other physical facilities. The service provides analysis of current and projected needs necessary to formulate University schedules and new building programs. The office is responsible for the assignment of classrooms and other academic facilities on the campus. The office operates under the Vice-Provost for University Administration.

University Personnel Service

The University Personnel Service is responsible for meeting the employment needs of individuals and departments for the entire University complex. The office functions in the areas of recruitment, interviewing, screening, testing, placement and salary and fringe benefit administration for full-time and part-time, permanent and temporary, non-teaching and non-student 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 processing, maintaining personal record data for both faculty and staff employees.
Scholarships and Loans

All financial assistance available to University of Iowa students from general University sources is administered by the Office of Student Financial Aid. Assistance is provided through scholarships, grants, loans, and part-time job placements.

A student seeking assistance must first complete University admission procedures, including the American College Test, and submit a parents' financial statement through ACT Financial Aid Services, Box 1000, Iowa City 52240, or College Scholarship Service, Box 881, Evanston, Illinois 60204. When it receives a copy of the parents' statement, the Office of Student Financial Aid will supply forms and instructions for applying for aid at Iowa.

Only one application is necessary each year for all forms of assistance administered by the Office of Student Financial Aid.

Application deadlines are February 1 for entering freshmen, April 1 for upperclassmen and transfer students.

Eligibility for Scholarships

To qualify for scholarship assistance, an entering freshman must have graduated in the upper 10 percent of his or her high school class or have achieved a 28 or above composite ACT score; an upperclassman must have a 2.75 cumulative grade-point average, and a transfer student must have at least a 3.0 transfer grade-point average.

Freshman Honors Awards

Entering freshmen eligible for invitation to participate in The University of Iowa Honors Program are recognized as Freshman Honors Scholars and receive the University's $100 Freshman Honors Award. A student meeting these requirements will receive the award, whether or not he or she elects to participate in the Honors Program.

Educational Opportunity Grants

Available to a limited number of undergraduates unable to attend college or university without such assistance, EOF grants range from $200 to $1,000 a year but cannot exceed one-half of the recipient's total assistance. There are no specific academic requirements for an EOF grant, but the applicant must have shown academic or creative promise.

National Defense Education Act (NDEA) Loan Fund

This is the University's largest source for long-term education loans. Undergraduate students may borrow up to $1,000 a year and $5,000 overall; graduate students may borrow up to $3,500 a year and $10,000 overall. Applicants must be citizens or permanent residents of the United States. Freshmen have preferences. An upperclassman must be in good academic standing and be making normal progress toward a degree. No interest is charged while the borrower is at least a half-time student. Loans are repayable at three percent interest beginning nine months after the borrower concludes his course of study. Ten percent of the loan obligation is canceled each of the first five years the borrower is employed full-time teaching.

Health Professions Scholarship and Loan Program

Students are eligible to apply for a Health Professions Scholarship and/or Loan at a school which participates in the program if the student is a citizen or national of the U.S., is enrolled or accepted for enrollment as a full-time student pursuing a course of study leading to degrees of doctor of medicine, pharmacy, osteopathy, optometry, podiatry, veterinary medicine or a degree in pharmacy and/or nursing and is in need of such financial assistance to pursue the course of study. Repayment of the loan portion is arranged with the school at the time of graduation or at the time the student ceases to be a full-time student.

Law Enforcement Education Program

This Program consists of a federally-funded program of loans and grants. Loans can be up to $1,800 per year, and grants can be up to $2,300 per year, or $200 per quarter to be used for actual cost of tuition and books. To be eligible for the loan program, the participating school must have more than 15 hours of courses directly related to law enforcement. All participating schools are eligible for grants. The program is available to pre-service and in-service law enforcement personnel. A recipient can be either a full- or part-time student. Cancellation provisions are available with the loan program.

Guaranteed Loans

Borrowers negotiate directly with banks or other private lending agencies. About half the banks in Iowa participate in the program. Lending institutions in most other states participate in this or similar programs. The maximum loan is for $1,500 a year. Repayment begins when the borrower concludes his or her course of study.

University Loan Funds

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

Part-Time Jobs

Most University students who take part-time jobs secure them through the Office of Student Financial Aid. The most numer-
Scholarships and Loans

Student Aid Scholarships—Resident students in colleges of Liberal Arts, Engineering, Business Administration, Nursing, Pharmacy

Iowa City Chapter of the United Nations Association Scholarship—Educational Opportunity Program participant; resident tuition

Athletic

Hite Kincaid Memorial Scholarship Award—Available in April or May to a junior student who excelled in the field of Kincaid, for his senior year at Iowa; named by the Athletic Department; low and conform; administered by the University Committee on Student Aid Awards and Aid

Terry Gordon Award—Named by the Director of Athletics and head coaches in football, basketball, baseball, track and wrestling, given annually to a student athlete in his senior year;

Bucky O’Connor Memorial Scholarship Award—Named by the Director of Ath-
netics; named after coach, football, track, sports information Director and the Direc-
tor of Student Financial Aid: must be a member of the senior basketball or golf team who excels in scholarship and athletic ability

Prior 7 Junior Memorial Scholarship Fund—To provide financial assistance to student athletes whose accomplishments athletic ability has been, but who is not enrolled at The University of Iowa

Business Administration

ALCC Foundation Scholarships—Junior or senior in accounting

Andrew & Company Accounting Award—Accounting

Carr Scholarships—See all University

Pierce Award—Junior or senior, preferably business administration major with interest in retail buying business; $200

Eaton & Eaton—Accounting

FS Services Inc. Scholarship—Junior and senior appearing major with Iowa or farm community background in top 25 percent of class; $200

Rutland & Selbo Award—Senior among top five accounting students; $300

Ryan Federal Savings and Loan Association of the Midwest—Scholarships; re-
search grants to further education in finance, insurance, real estate.

Jeno Foundation for Insurance Education Scholarships—Junior or senior in business school

E & S Foundation for Insurance Education—Junior or senior in business school

 komen Foundation Scholarship in Business Administration—$200 each to one junior or senior in accounting, one in marketing

Mary Price—$300

McConnell Family Accounting Award

Clemo A. Phillips Scholarship—Business administration senior in upper 10 percent of class; not less than $250

Price Waukegan Foundation Award—Accounting

Bruce M. Robertson Scholarship—Iowa high school graduate, $1,000 for senior

Trane-Ran and Company—Accounting

Student Aid Scholarships—See all University

Coppin Family Foundation Scholarship Award—Junior or senior in business administra-
tion major; tuition, fees, books

Arthur Young & Company Foundation Award—Accounting

Dentistry

Dental Scholarship

Odell B. Tuttle Scholarship—Junior or senior, $500

W. R. Pray Company Dental Scholarship—Junior or senior, $500

Scholarship Award—Junior; proficiency in orthodontics

* 1 of 2 Dental Achievement Foundation Scholarships

Private Dental Scholarship—Junior or senior, $500

Health Professions Scholarship

Dental Hygiene

Odell B. Tuttle Scholarship—$20

Engineering

ALCC Foundation Scholarship—See all University

All-University

ALCC Foundation Scholarships—Freshmen in mathematics, physical sciences or engineering; $600

Anxiety Scholarships—Students with above-average academic records who have been diagnosed with anxiety disorders in extracurricular activities requiring special aptitudes; such as music or theater.

Bouwer Scholarship—Senior Scholarships—Prefer students, preferably from Bennet, Iowa

Ernie M. Morey Scholarship—Graduates of Cedar Rapids public schools

Gruver Scholarship—Students in colleges of Liberal Arts, Business Administra-
tion, Engineering, Nursing, Pharmacy primarily for seniors and nonseniors

Hake Scholarship—Minor students from West Liberty, Iowa, and vicinity

Haeberle Scholarship—See all University

General Merit, Foundation Scholarships:

Stout german (M. German) Scholarship—Students from Maquoketa, Iowa

Greger Scholarship—Graduates of First Day or any other Webster County, Iowa, public school with three years of study qualifying for admission to the University of Iowa, as determined by the Board of Education, Independent School District, First Day

Virgil M. Houser Scholarship—Junior student selected from underclassmen college recommendations.

International Scholarships—Foreign students; tuition and fees

Martin Luther King Jr. Scholarship—Senior; ethnic minority student, public school

Lindall A. Becker Scholarship—Son, daughter, business administration major, high school graduate, Iowa high school.

Manning Foundation Scholarship—Graduating high school seniors whose per-
sons are full-time employees of The Manning Company, fee paid-in full; grant; apply to The Manning Company Foundation, Inc., Newton, Iowa

Mary Sue Miller Memorial Scholarship—Act major, preferably from Newton, Iowa

Nguyen Scholarship—Minor fees in college of Radiology Administration, Engin-
eering, Liberal Arts, Nursing, Pharmacy, for United States citizens who are Men-
nones; $1,000; three years, $1,500; four years, $2,500

Old Gold Scholarship—Minor—students

Percival Scholarship—Minor; foreign or junior, or senior or nonmember of Iowa state

Public Speaking Scholarship—Highest rated festival, six entries, two speakers in Iowa High School Forensic League competition; $30,000 donation in semester fees, three years, recipients nominated by head of Department of Speech and Drama; Art

Roderick Scholarship—Award given annually to a student at the beginning of his senior year; $100

Rudolf W. Bollecke Scholarship

Studike Scholarship—Directed toward students of minority back-
ground who are in need of financial assistance

Stinson Highledger Scholarship—Awarded each semester to two high school students

Two High School Students in Iowa: one with superior, junior or senior standing
Scholarships and Loans

Metlife Pk Klement Scholarships
P. M. Stender Engineering Scholarship
Engineering Honor Scholarship—Giving freshmen and transfer students;
Faculty Educational Foundation Trust Scholarship—Students in courses
related to education
Lloyd A. Ekeved Scholarship
Lombard Scholarship—Civil Engineering
C. P. McChesney Scholarship
Mississippi Mining and Manufacturing Company Scholarship
Mississippi Scholarship—Chemical and environmental engineering
Herman W. Nelson Memorial Scholarship
Professor Scholarships—$250 to $500
Student Aid Scholarships—see All-University
Western Electric Funds Scholarship in Engineering—Tuition, fees, books

Graduate
Approximately one-half of the University's graduate students receive some form of University-administered financial assistance. Eligibility requirements and application procedures are set forth in "Section VII. Graduate Appointments" in "Rules and regulations of the Graduate College."
The following are the primary sources of assistance:

Teaching and research assistantships—Available in most departments; stipends range between $3,000 and $3,750 for half-time assistants; assistants are also eligible for tuition scholarships; nonresident assistantships (one-quarter time or more) and fees are reduced to resident rates.

University teaching-research fellowships—For doctoral students and first-year graduate students entering doctoral programs; typical stipends of $4,000 a year on a year-around basis, for as many as four years; recipients have teaching and research assignments but may carry full course loads at the same time; one year out of four and all summers, recipients have full time to pursue studies, research or writing.

Scholarships—Up to full tuition and fees.
Graduate fellowships—$3,000 for the academic year.
ND ESA Title IV fellowships—For prospective college teachers pursuing the doctorate; provides stipends of $2,400-$2,800, which includes summer study, plus $500 for each dependent and full tuition.

JSP opportunities—For students interested in social, biological or physical sciences; provides stipends of $2,400-$2,800, which includes summer study, plus $500 for each dependent and full tuition.
EPESA Part I fellowships, college teacher program—Designed to prepare college or community college instructors; provides a 12-month stipend of $2,400 for the first year and $2,600 for the second year, plus full tuition and $500 annually for each qualified dependent.

The provisions described above are subject to change.

University and National Defense Education Act loans are available through the University's Office of Student Financial Aids.

Many departments offer additional support through traineeships, part-time employment in research or part-time teaching appointments. The Office of the Vice-President for Educational Development and Research maintains a library of information on public and private agencies which provide funds for research and graduate study. A considerable amount of material has been collected concerning awards for overseas study.

A number of industrial corporations and philanthropic organizations annually provide graduate fellowships in certain departments at the University. Information may be obtained from the departments. The University also participates in fellowship and internship programs of the National Science Foundation, National Institutes of Health, Atomic Energy Commission and National Aeronautics and Space Administration, and in the National Defense Education Act Fellowship Program and the Education Professions Development Act. Information may be obtained from the Graduate College or departmental office.

Law
Cousin Scholarships
Michael Cermak Memorial Aid Fund
Edgar C. Cory Memorial Scholarship—Preferences to Iowa residents
Demarest Scholarship
Dillon Scholarship
Herald J. Gallagher Scholarship and Loan Fund
Graduate Grants
Hanneman Scholarships
Iowa Law School Foundation Scholarships
Iowa Trial Lawyers Academy Scholarship
Legacy Scholarship
Harry M. Hess Memorial Scholarship Fund
Loudon Scholarships—Applying to the Class of the Law School
William B. R. Rehm Scholarship Fund
Joseph F. Stassenfield Scholarship Fund—Income of tuition; preference to Iowa residents graduated from Criminal or another Iowa college
Lutzel and Weller L. Stewart Fund
Joe H. Yee Fund—Available for Marine Luther King Scholarship

Liberal Arts
Carl Scholarship—see All-University
Margaret Foster Hoy Memorial Scholarship—Home economics senior; resident tuition
Old Gold Scholars—Hannum Program participants apply to Honors Program director.
George Laverne and Jesse Rubenstein Nick School Scholarship—Freshmen and sophomores planning to major in Chinese language and civilization; $500
Phillips Scholarship
Presidential Scholarships—Art majors, preference from Warren County, Iowa; $1,200
Robertson and Webster Scholarships—Male students from Midwest, particularly Iowa, interested in studying actuarial science, $500
Student Aid Scholarships—see All-University
Wyland Scholarships

Journalism
James W. Blackburn Scholarship—High school senior planning to enroll in the School of Journalism, $1,000; paid $150 sophomore year, $500 junior year, $650 senior year
Henry B. Brach Scholarship—Freshman journalist major; $1,000; paid $250 second semester of junior year, $500 each semester of senior year
Denmark-Twemer-Democrat Scholarship—$250, paid $150 junior year, $100 sen-
ior year
Harvey and Marlene Brown-Jones Scholarship—Mr. and Mrs. Brown Scholarship for a talented and motivated journalism major; $1,000 to $2,000
John F. Brumley Scholarship in Journalism and Advertising—Annually vary
George H. Durkee Scholarship—Additional aid in planning to major in journa-
lism, $500, paid $150 junior year, $250 senior year
Quill and Scroll Foundation Scholarship—High school seniors planning to ma-
jor in Journalism, $500, paid $250 freshman year, $250 sophomore year.
Scholarships and Loans

Ramsey Advertising Internship—To give outstanding student in advertising an opportunity for agency experience between junior and senior years. $100
School of Journalism News Foundation Scholarships—Annually vary
School of Journalism Merit Scholarships—Freshmen, sophomores, juniors, seniors
Seniora Scholarship—For a freshman minority student who is also eligible for Special Academic Scholarship. $1,000.00
Richard and Ann Spencer Scholarship—$1,000.00. High school senior planning to study in School of Journalism, and $100 to $200 for entering junior or senior who demonstrates promise in journalism. $250 to $500 to one student in WNYT News Radio—Further information through journalism school; recipient spends summer observing and participating in WNYT station's operations. $1,500

Medicine
(Extended upon recommendation of the College faculty committee and dean.)
Richard G. Adams Memorial Scholarship—Full resident tuition
James H. Leonard Scholarship—Full resident tuition
Anne Bicknell Norcross Scholarship for Women—Woman student from Buffalo or its adjacent county in New York State.
Equitable of Iowa Scholarship
Jane Accardi Scholarship
Joseph A. Meier Scholarship
Jane and Floyd K. Rawlings Scholarship
Theodore A. and Elise Schlesinger Scholarships

Nursing
Psychiatric Mental Health Nurse Stipend—$2,500 plus tuition, fees, junior, senior, in-home care training programs, registered nurses in senior year, in preparation for graduate study in psychiatric mental health nursing
Army Nurse Corps Student Nurse Program—tuition, books, board and room, allowance, monthly salary, junior, senior, restricted commissioned second lieutenant with full pay, six months before graduation, serve two- or three-year terms of active duty in Army Nurse Corps after graduation. $3,000.00
Deep River Corps Nurse Program—books, board and room, monthly salary, junior, senior, restricted commissioned second lieutenant with full pay, six months before graduation, serve two- or three-year terms of active duty in Deep River Corps after graduation. $3,000.00
Professional Practice Program—tuition, stipend, registered nurse students in good standing, for positions in hospitals or schools of nursing within 12 months of graduation.

Pharmacy
American Foundation for Pharmaceutical Education Scholarships—Students in last two years of medical school. $100
Carroll Scholarship—$1,000.00 to senior
John W. McGowan Foundation Scholarship—$2,000, minimum 2.5 average
Sara M. Johnson Scholarship—All University
Iowa Pharmacological Association Scholarship—Students who have completed PB, minimum 2.5 average
Local pharmacy associations’ women’s auxiliary scholarships—varies
Iowa Pharmacy Association Foundation Scholarship—$300
Mary H. Davis Scholarship—$1,000

Wilder J. Towers Scholarship—Student who has completed first year with minimum 2.5 average for minimum of 20 semester hours $1,275

Reserve Officers Training Corps
ROTC Scholarships—Amended annually, competitiveness. Students through senior years in Army Air Force ROTC programs, full tuition, laptop computer expenses, incidental fees, books, allowance. $2,000 monthly remuneration allowance; freshmen must complete application early. enroll in ROTC fall of senior year. Students meeting two-year program apply. There are a limited number of Army ROTC two-year scholarships given to graduate students.
Area News Communications and Electronic Association Scholarship—$200. ROTC student in courses related to Association’s sphere of interest. $200 annually, junior and senior years.
Horace and Terry Johnson Scholarship—Junior ROTC student who has long, personal, professional, academic, and financial connections with Eyring. $200 annually, alternates between Air Force and Army

Loan Funds
All-University
Carr Graduate Fund
Daughters of the American Revolution Student Loan Fund—Junior and senior women residents of Iowa. $750 maximum annually
Don’s Loan Fund—$3,000 emergency. $500 emergency
Dolphins Club Loan Fund—Priority for Dolphins Club members
Frederick Hand Memorial Loan Fund—See Students’ Guide
Ford Foundation Grant—See Engineering
General Loan Fund
Chien-Shen Gnadol Student Summer Aid—Up to $1,000.00. Prior year’s grades in graduate school.

Veterans Loan Fund
Women and Minorities Loan Fund—Amherst County, Iowa, students. Minimum Personal Student Loan Fund—First time student, dental and pharmacy students, federal loan, interest-free during recipient’s full-time registration, repayable during 10-year period, beginning three years after recipient terminates full-time study in medicine, dentistry or pharmacy.

Institutional Student Council Loan Fund—Foreign students. $100,000 annual
Iowa City Bell Service Club Loan Student Loan Fund
Iowa City Police Benevolent Loan Fund—$500.00, non-union, interest-free
Iowa City Police Benevolent Loan Fund—Interest-free, $500.00 emergency

Old Gold Development Loan Fund
C L. Jr., and Thelma Klink Loan Fund

Old Gold Development Loan Fund—See Dental Association

Old Gold Development Loan Fund—See Dental Association

Donald J. Uchendu—Special education
Old Gold Development Loan Fund—Special education
Strong Educational Foundation Loan Fund—Application age 21 or older, repayment at three years’ earning full-time grant of Education

Business Administration
Bowen-Crespo Loan—High ranking senior and graduate students apply to Bowen, Alumni of University of Southern California, Los Angeles

Dentistry
American Dental Association Fund for Dental Education
Brenau Memorial Student Loan Fund
Ellen Thrasher Scholarship Loan Fund of the Association of American Women
Ina M. Threlkeld Women's Loan Fund—Freshmen
Irma Daniel Associates Student Loan Fund—Freshmen
Irma Daniel Associates Student Loan Fund for Special Students
Old Gold Development Loan Fund
Start Loan Fund
American Dream Trade Association—Scholarship
International College of Dentistry/USA—associates Student Loan Fund
Charles W. Crow Loan Fund

Dental Hygiene
Alpha Kappa Gamma Loan Fund—Seniors, noncommissioned junior
Irma Daniel Associates Women's Auxiliary Loan Fund
Wilma Pugh Memorial Loan Fund—Preference to graduate students
Charles H. Broussard Memorial Loan Fund
Irma Daniel Rappeneer's Associate Loan Fund

Engineering
College of Engineering Loan Fund—Short-term
Iron City Engineering Club Loan Fund
Ford Foundation Green—Agrochemical production loans to future engineering teachers; apply to Dean, College of Engineering
Russ Slobodin Jones Memorial Loan Fund—$250.00 forx emergency loans
Philip P. Morgan Student Loan Fund—See Graham

Law
American Bar Association Loan—Second and third-year students; up to $1,500 a year, repayable after graduation
Iron Law School Loan—Long-term; repayable at three per cent interest, beginning one year after recipient's graduation
Iron Law School Foundation Loan—Short-term
Law Concerned Loan Fund—Second- and third-year students; short-term

Liberal Arts
Thomas Cole Loan Fund—Graduating students
Dickie Loan Fund—Students who have completed at least one year

Loew Memorial Student Loan Fund
Ph. E. Kilgore Loan Fund—Physical attention for men, women
Great Northern Bank Loan Fund—Computer science students
S. C. W. Willman Loan Fund—Supernumerary or above

Medicine
(Applied to the Dean of the College)
Brock Loan Fund
Iron Medical Student Memorial Loan Fund
Graduates of the College of Medicine Loan Fund—Supernumerary through senior year
Iron Medical Tuition Loan Plan—Iron residents who agree to practice general medicine in Iron for at least five years after completion of medical training; state fund; provides tuition up to three years
Earle Loan Fund for Medical Students
College of Medicine Loan Fund
George M. Middleton Loan Fund
Frank Sobrato Memorial Loan Fund
Sorosoo Medical Foundation/Iron Medical Society Student Loan—At the sophomore, junior and senior classifications and at the freshman level in the case of academic need
Sharon Trust Fund—Iron residents
Sheed Foundation Loan Fund

Nursing
Nursing Student Loan Program—Full-time nursing students; Federal funds, interest-free during student's full-time registration; repayable at three percent interest, beginning one year after recipient's termination of full-time registration, forgivable at the rate of 10 percent per year of full-time employment as professional nurse in public or nonprofit private institutions, up to 50 percent of balance owed at beginning of such employment
Earle Loan Fund for Nursing Students
U.S. Government Scholarship Loan Fund—Junior, seniors, $300 maximum
S. L. M. Thompson Loan Fund
1961 Nursing Class Loan Fund

Reserve Officers Training Corps
Lt. Col. E. Stafford W. Barnes Memorial Loan Fund—Advanced Army ROTC students
Alumni and friends of the University have provided a number of awards, prizes and honors in recognition of students' special achievements. Detailed information on criteria and procedure for the selection of recipients may be obtained from the administration office. Generally, recognition is in the form of certificates, plaques, medals, desk sets or similar items; cash awards of $50.00 or more are indicated in the following list:

General
Alpha Chi Sigma Award—Male with highest scholastic standing for first two semesters of graduate work in architecture, chemical engineering or mechanical Engineering; Ballou Award—$50.00; semester for efforts in self-study while maintaining satisfactory academic work.

Bachelor of Science—Honors awarded to members of the faculty.

Bunge Award—Senior with highest scholastic average among students elected to Phi Beta Kappa at graduation.

Burrage Award—Outstanding potential in radio broadcasting at University of Pennsylvania.

Fisher Award—$250.00 active Mentor Master member.

Fisher Award—$250.00 government bond; junior woman most nearly exemplifying qualities and contributions of Mrs. Emily M. Fisher to the University community.

Hoffman Award—Junior; academic excellence, critical intelligence, character, broad and comprehensive career for ultimate and spiritual purposes.

Hoffman Award—Junior; leadership, loyalty and devotion to University activities; $250.00.

Pennsylvania Award—Junior; leadership, scholastic achievement, participation in student activities.

Athletic

Athletic Board Award—Graduating senior award winner outstanding in athletics and scholarship.

Athletic Scholastic Award—Female student athlete with highest scholastic average in each intercollegiate sport; highest scholastic average freshman year and varsity squad member sophomore year; Female Student Athlete Scholastic Achievement Award—Senior award winner outstanding in scholarship.

C. Converse—Graduating students who have been in one or more bowl games.

Haverford Women's Intercollegiate Conference Athletic Association Medal—Outstanding senior female award winner outstanding in scholarship and athletics.

College of Business Administration
Best Overall Phi Alpha Beta Scholar—Outstanding senior in academic work; Best Graduate Sigma Gamma—Highest graduating junior member.

Sigma Pi Kappa—Highest graduating senior in the College.

Iowa Society of Certified Public Accountants Outstanding Achievement Award

Phi Gamma Nu Exp.—Highest ranking senior woman in the College.

College of Dentistry

American Academy of Oral Pathology—Senior who has shown the most interest, accomplishments and promise in the field of oral pathology; American Academy of Oral Radiology—Senior; special interest in oral radiology; American Academy of Periodontology—Outstanding student in periodontology.

American Association of Endodontists Award—Senior; highest proficiency and interest in endodontics; and exemplifying A.A. E. Smith American Association of Orthodontists Award—Senior; exceptional interest in orthodontics.

American College of Dentists Award—Senior; outstanding paper on topic assigned by A.C.D. to a senior student.

American Dental Society of Anesthesiology Award—Senior; outstanding ability and interest in anesthetics; American Society of Dentistry for Children Certified—Senior; interest and proficiency in children's dentistry.

Black Dog Company Award—Senior; the essay on a subject chosen by Dean of College.

Wadley Collins Senior Dentistry Award—Outstanding junior in clinical operative dentistry; Dental Chair of the Year Award—Senior or junior student or student, scholarship, professional attitude, character, personality.

Dental Class of 1979 Award—Outstanding; highest scholastic standing freshmen year.

Dental Supply Company Award—Outstanding senior in practice.

Finance Merit Award—Senior; excellence in basic sciences, interest in oral manifestations of systemic disease.

William W. Griswold Memorial Award—Dental graduate returning advanced studies in dental surgery or allied dental sciences.

Mark L. Haskin Award—Outstanding achievement in oral surgery research.

International College of Dentists Award—Senior; highest proficiency and development, upper four of class; Iowa Society of Oral Surgeons Award—Most promising senior in oral surgery.

Lamar Perryman Periodontal Award—Top senior in periodontology.

M. M. Schleisner Award—Senior; excellence in periodontics.

Mortar Board Award—Highest freshmen showing high scholastic proficiency and promise; for seniors with demonstrated proficiency and professional promise.

S. M. Hoh M. Achievement Award—Senior; highest Dental hygiene student on basis of responsibility and leadership, scholarship, clinical performance and professional attitude.

Sigma Kappa Sigma Honor Society Membership—Membership in dental hygiene students based on scholarship, character and professional potential.

Sigma Pi Alpha Honor Society Membership—Membership for dental hygiene students based on scholarship, character and professional potential.

Dental Hygiene

Sigma Pi Alpha—The national dental hygiene honor society dedicates itself to the promotion and expansion of the dental hygiene profession, and to the advancement of the dental hygiene profession; its aims are to maintain standards of education, to maintain standards of practice, and to promote professional growth and association.

Society of Dental Hygienists’ Association—Senior; highest dental hygiene student on basis of performance and leadership; scholarly and clinical proficiency; year; sponsored by the Iowa Dental Hygienists’ Association.

College of Engineering

American Association of Electrical Engineers Award—Freshman, sophomore; highest scholastic rank.

American Society of Civil Engineers—High ranking senior student.

American Society of Mechanical Engineers—Senior; outstanding student award.

American Society of Mechanical Engineers—Senior; outstanding student in periodontology; American Society of Mechanical Engineers; American Society of Mechanical Engineers.
Military
Army ROTC

Army ROTC Achievement Award—Second-, third- and fourth-year cadets; top 10 percent of class; present year.

Army ROTC Merit Award—Junior ROTC cadets; top 20 percent of class; present year.

Army ROTC Marksmanship Award—Junior ROTC cadets; top three percent of class; present year.

Air Force ROTC

Air Force ROTC Achievement Award—Second-, third- and fourth-year cadets; top 10 percent of class; present year.

Air Force ROTC Merit Award—Junior ROTC cadets; top 20 percent of class; present year.

Air Force ROTC Marksmanship Award—Junior ROTC cadets; top three percent of class; present year.
be a co-secular in the beginning of the next semester, quarter or session in which the student is enrolled after the date of the parents' removal from the state.

A minor under 16th graduation shall not be granted resident status at the time of graduation

A student living with a parent, relative or a friend who is a resident of Iowa, but not a student's legal guardian, may be granted resident status if he has lived with the resident for at least one years prior to high school graduation or if he is a first generation Iowa resident. The student's resident parents or guardians must be documented in another state, or (6) The minor, if over 16 years of age and not married, has established a bona fide residence in the state of Iowa by residing in the state for at least 12 consecutive months immediately preceding the beginning of the semester, quarter or session. Students from outside Iowa must meet the resident status in the state primarily to attend college, but in the state for purposes other than to qualify for resident status.

Any nonresident student who resides in the age of 21 years or is married while under 21 years of age who is a student at any school or college does not, by virtue of such fact, have status in this state for admission or tuition purposes.

5. General Facts. The resident status for admission, the tuition and the purpose of a non-Iowa student shall be determined under these rules irrespective of the classification of the parent. Married students under 21 years of age shall be exempt from the state of residence age as of the date of their marriage.

6. General Facts. The resident status for admission, the tuition and the purpose of a non-Iowa student shall be determined under these rules irrespective of the classification of the parent. Married students under 21 years of age shall be exempt from the state of residence age as of the date of their marriage.

7. General Facts. The resident status for admission, the tuition and the purpose of a non-Iowa student shall be determined under these rules irrespective of the classification of the parent. Married students under 21 years of age shall be exempt from the state of residence age as of the date of their marriage.

8. General Facts. The resident status for admission, the tuition and the purpose of a non-Iowa student shall be determined under these rules irrespective of the classification of the parent. Married students under 21 years of age shall be exempt from the state of residence age as of the date of their marriage.

9. General Facts. The resident status for admission, the tuition and the purpose of a non-Iowa student shall be determined under these rules irrespective of the classification of the parent. Married students under 21 years of age shall be exempt from the state of residence age as of the date of their marriage.
A. Transfer credits from a junior college will not be accepted if the credit is earned after the total number of hours of credit accumulated by the student at all institutions exceeds twice the number of hours needed for the earning of the baccalaureate degree.

B. Student transferred from another college—a college may refuse to recognize credits from another college or may admit a student at a provisional status and require the student to retake any course in violation of state or federal laws. The student will be subject to the serious conduct provisions of the college until the grades are transferred or until the student is admitted on the basis of the grades. Students transferred from a junior college will be considered on his own merits, and the admission or rejection is at the discretion of the admissions office.

C. Application Deadlines

Applicants for admission must submit the required documentation for admission and the necessary official transcripts and other required documents to the admissions office of the appropriate college at least 30 days prior to the beginning of the semester for which the student is applying. Applicants for admission from states who are required to take the SAT exams will not be considered unless the examinations can be completed at least five days before the beginning of the semester. This regulation may be waived by the admissions office for only two-year reasons.

The University does not accept applications to the colleges of Medicine and Dentistry of The University of Iowa and Regals regarding any of the sections I, II, III, IV, and V above. All incoming students must complete the American College Testing Program’s (ACT) American College Testing Plan (ACT) or the equivalent as required by the admissions office before the beginning of the semester in which the student is registered.

II. Supplemental Specific Regulations for Each Institution

The following requirements are in addition to those given in section I above.

A. The University of Iowa

All applicants for admission to any college of The University of Iowa must submit a formal application for admission to the required official transcripts and other supporting materials, as required, to the Director of Admissions. Students may not be admitted until they have been officially admitted by the Dean of Admissions.

1. College of Business Administration

Applications for admission to the College of Business Administration should be submitted to the Director of Admissions. All applicants should submit a completed application form. The Director of Admissions of the University of Iowa may require that the applicant provide additional documentation or meet certain admission standards.

2. Mba Program

The Mba Program is a highly selective program designed to meet the needs of individuals seeking advanced training in business and administration. Admission to the program is based on both academic and professional qualifications. Applicants who hold a baccalaureate degree from an accredited institution and have a minimum grade point average of 3.0 on a 4.0 scale are encouraged to apply.

3. Accommodations

All students with disabilities are encouraged to apply to the College of Business Administration. The University of Iowa is committed to providing a supportive and inclusive environment for all students. If you have any questions regarding the admission process or need additional information, please contact the Office of Accessibility Services.

4. Admission Requirements

Admission to the College of Business Administration is based on a competitive merit index. The merit index is calculated based on a combination of high school grades and standardized test scores. The College of Business Administration recommends a minimum of 12 college-level courses, including a minimum of three courses in college-level mathematics, science, and foreign language. Applicants who do not meet these requirements are encouraged to complete additional coursework before applying.

5. Application Process

Applications for admission to the College of Business Administration must be submitted online through the Common Application. The application must be completed by the deadline specified by the College of Business Administration. Applicants who do not meet the required deadlines may not be considered for admission.

6. Financial Aid

The College of Business Administration offers a variety of financial aid options to support students in their pursuit of an advanced degree. Students are encouraged to explore all available options, including scholarships, grants, and loans.

7. General Information

For more information or assistance, please contact the Office of Undergraduate Admissions. The Office is located in 1005 University Station, Iowa City, IA 52242. The office phone number is (319) 335-1191. The Office of Undergraduate Admissions is open Monday through Friday, 8:00 AM to 5:00 PM.
9. College of Nursing

Applicants for admission to the undergraduate program in nursing must present a minimum of 20 semester hours complete in an accredited liberal arts college, including satisfaction of the following minimum requirements:

English—University of Iowa transfer applicants must have satisfied the rhetoric requirements of the College of Liberal Arts at The University of Iowa. Applicants from other institutions may qualify by completing an semester hours of credit in English composition and two semester hours of credit in speech.

Mathematics—All applicants must have completed two and one-half years of mathematics at the secondary school level, or a precalculus or a calculus level on the mathematics hierarchy of the Association of American Colleges, or completed one semester of calculus and one semester of college algebra.

Chemistry—All applicants must have completed four semester hours of college credit in college science.

Applicants from the College of Liberal Arts at The University of Iowa should also complete a four-semester-hour course in organic and biochemistry. Applicants who transfer from other accredited colleges may, if necessary, complete the organic and biochemistry requirement after admission to the College of Nursing.

All applicants are required to complete the American College Test. Applicants who are graduates of associate degree or diploma programs of nursing must have successfully passed the examination for registered nurses before admission to nursing courses.

To be considered for admission, an applicant should have attained a cumulative grade-point average of at least 2.5 on all college work undertaken. The grade-point average is based upon the ranking system of The University of Iowa, in which a grade of "A" is equivalent to 4.0. Other ranking systems will be evaluated by the Office of Admissions.

The specific requirements for admission listed above do not lessen admission to the College of Nursing. From the applicants meeting the minimum requirements, the admissions committee of the College of Nursing will select those applicants who, in their judgment, appear to be best qualified. The Nursing admissions committee will require personal interviews of applicants.

Address all inquiries regarding admission to the Department of Nursing. The University of Iowa, Iowa City, Iowa. Applicants with no previous preparation in nursing may apply for admission to the nursing program as a part-time student. In the fall semester, applicants who are employed are admitted to the same procedures, except that they may be admitted either the fall or spring semester. The closing date for matriculating applications shall be April 15 for the fall and November 15 for the spring semester.

9. College of Pharmacy

General Basis for Admission

Fullfilment of the specific requirements for admission does not lessen admission to the College of Pharmacy. From the applicants meeting the specific requirements, the admissions committee will select those applicants who, in their judgment, appear to be best qualified. Applicants for admission to Pharmacy shall have graduated from an approved high school or have an equivalent amount of training.

The college work as outlined below will meet the minimum academic requirements for admission to the College of Pharmacy. The minimum includes 25-32 semester hours of college-level work, exclusive of credit in military and air science and physical education. The semester hour requirement must include:

Physics—two semester hours.

Chemistry—eight semester hours.

Molecular Biology and Biochemistry—eight semester hours.

Behavioral Science—eight semester hours.

Students from other institutions may submit a comparable eight-semester hour course in biology, in lieu of the above.

Chemistry, Physics, and Biology—eight semester hours.

Students from other institutions may submit a comparable eight-semester hour course in biology, in lieu of the above.

Military or Air Science—eight semester hours.

Military or Air Science—eight semester hours.

Students from other institutions may submit a comparable eight-semester hour course in biology, in lieu of the above.

Scholarship and Application Deadline

To be considered for admission to the College of Pharmacy, applicants must have earned a 2.5 or 2.0 on all college work undertaken. The minimum grade-point average of 2.5 is based on the University of Iowa's ranking system, in which a grade of "A" is equivalent to 4.0. Applicants for admission and the required documents should be filed before March 1 for the spring semester. February 1 for the fall semester.

Application Fee

Applicants for admission are required to take and pass the American College Testing Program to be considered for admission.

Current Requirements

All applicants who have completed work in a college of pharmacy accredited by the American Council on Pharmaceutical Education may, if their college academic average is acceptable, be admitted and granted advanced standing toward the degree Bachelor of Science in Pharmacy.
State Board of Regents
The University of Iowa, Iowa State University of Science and Technology, the University of Northern Iowa, the Iowa State Teachers College and the Iowa School for the Deaf are governed by the State Board of Regents consisting of nine members. The membership is as follows:

President: H. W. McCurdy, Iowa City
Vice Presidents: J. G. Carroll, Des Moines; J. H. McMillan, Charles City
V. R. Van Brunt, Chariton
J. G. Woodbridge, Clarion
R. E. Stockstill, Council Bluffs
J. O. Robert Miller, Cedar Rapids
T. R. McCracken, Charles City
W. R. Jones, Mason City
R. H. Wallen, Mason City
Executive secretary: R. Wayne Reilly

Central Administration
President: Willet L. Boyer, Jr., B.S., LL.B., L.L.M., B.D.
Vice President for Student Services and Dean of Admissions: Philip G. Haberly, B.S., E.K., M.S., Ph.D.
Vice President for University Administration: George A. Chambers, B.A., M.A., Ph.D.
Vice President and Dean of Health Affairs: Robert C. Hardin, B.S., M.D.
Vice President for Educational Development and Research: Dean of the Graduate College: Donald C. Smoot, B.S., M.A., Ph.D.
Vice President for Business and Finance: Dean T. J. Smith, B.S.C.
Assistant Vice President and Associate Dean for Academic Affairs: Robert E. Engel, A.B., B.D., Ph.D.

Colleges
Business Administration
Dean: R. L. Harper, B.S., M.B.A., Ph.D.
Center for Labor and Management
Director: John F. West, B.A., M.P.A., Ph.D.

Dentistry
Dean: Donald J. Gage, D.D.S., M.P.H.

Education
Dean Howard P. Jones, B.S., M.A., Ph.D.

Engineering
Dean: John W. Stier, M.S., Ph.D.
Institute of Hydraulic Research
Director: F. Kennedy, B.S., M.S., Ph.D.

Graduate
Dean: Donald C. Simonshank, B.Ed., M.A., Ph.D.

School of Advanced Studies: Arts & Science
Dean: D. M. A., Ph.D.

Liberal Arts
Dean: Daniel P. Siedentop, B.S., M.E., Ph.D.

Division of Fine Arts
School of Art and Art History
Director: Frank A. Barden, B.A., Ph.D.

School of Music
Director: Marie Vanier, B.S., M.A.

School of Journalism
Director: Archibald M. Maclean, B.A., M.A., Ph.D.

School of Letters
Director: John C. Carter, B.A., M.A., Ph.D.

School of Library Science
Director: Frederick Wasserman, B.S., B.L.S., M.Ed.

School of Religion
Director: James C. Spalding, B.A., B.D., Ph.D.

School of Social Work
Acting Director: Ralph E. Anderson, B.A., M.S.W.

Law
Dean: Leonard E. Storrs, A.B., J.D.

Medicine
Dean: John W. Schott, B.S., M.D.

Nursing
Dean: Ethel Barks, B.A., M.A., Ph.D.

Pharmacy
Dean: Dale E. Winter, B.S., Ph.D.

Other Educational Units
Division of Extension and University Services
Dean Robert F. Ray, B.A., M.A., Ph.D.

Auditorium Center
Director: William Vodder, B.S., M.S., Ph.D.

Business Administration
Dean: William C. Smoot, B.A., M.B.A., Ph.D., M.S., Ph.D.

Bureau of Public Service
Director: Robert M. Chemer, B.S., M.A., Ph.D.

Center for Conference and Instruction
Director: Frank W. Bodner, B.A., M.A.

Center for International Programs
Director: Merle E. Orner, B.A., M.A., Ph.D.

College of Agriculture
Director: John P. West, B.A., M.P.A., Ph.D.

College of Education
Director: Richard B. Bunting, B.A., M.A., Ph.D.

Business Administration
Director: James W. Donley, B.A., M.A., Ph.D.

Computer Center
Director: Samuel P. Weng, B.S., M.S., Ph.D.

Institute of Child Behavior
Acting Director: Howard V. Melvin, B.A., M.A., Ph.D.

Libraries
Dean of Library Administration: Leslie W. Dunlap, B.A., M.A., B.S.L.S., Ph.D.

Summer Session
Dean of the University: B.S., M.B.A., Ph.D.

Health Affairs Units
Vice President and Dean for Health Affairs: Robert C. Hardin, B.S., M.D.
Academic Personnel

Professor, Anatomy, 1971

Avraham, Nele, B.A., Munich, 1959; M.A. (1975); Ph.D. (1975)
Professor and director, Nursing, 1967 (1968)

Professor, History, 1947 (1950)

Ayres, Thomas Andre, A. I., Iowa, 1954; M.A. 1954
Associate professor, Neurology, 1952

Bacon, E. Ann, A. I., Iowa State Teachers, 1933
Instructor, Home and Family Living, 1939

Baker, Paul A., California (Berkeley), 1948; M.A. (1952); Ph.D. 1956
Professor, English, 1952 (1966)

Banner, Norman C., B. S. Franklin, 1940; Ph.D. Iowa State, 1946
Professor, Chemistry, 1946 (1957)

Beard, John H., M. D. Ohio State, 1956; T.D. Indiana, 1960
Professor, Education, 1962 (1970)

Belley, Andrew R., F.B.S. Pennsylvania, 1964; M.S. (1966); Ph.D. Ohio State, 1971
Assistant professor, Accounting, 1971

Beyrle, Earnest Norman, B. S. Indiana, 1960; M.A. (1961); Ph.D. 1964
Associate professor, Business Administration, 1966 (1967)

Blair, abbot C., B. A. Wabash, 1911; B.D. Union Theological Seminary, 1914
M.A. Columbia, 1912; L.L.D. Wabash, 1937
Professor emeritus, Speech and Dramatic Arts, 1922 (1929)

Bord, Robert D., B.A. Huntington, 1954; B.D. Fuller Theological Seminary, 1957;
Ph.D. Indiana University, 1967
Professor, English, 1967 (1969)

Borger, Robert W., A. I., Iowa, 1956; M.D. 1960
Associate professor, Pediatrics, assistant dean, Student Affairs, 1945 (1970)

Instructor, Chemical Engineering, 1970

Buck, Joseph Ellis, B.S. Illinois, 1939; M.A. 1938; Ph.D. Princeton, 1943
Professor, English, chairman, European Literature and Thought, 1955 (1959)

Buehler, Richard G., B.A. Virginia, 1940; M.A. Indiana, 1946; Ph.D. Columbia, 1949
Assistant professor, Geology, 1949

Assistant professor, Psychology and Biology, 1970

Buehler, William H., A. B. Knox, 1927; M.D. Chicago, 1926
Professor, Medicine, 1948 (1961)

Bulik, Michael S., B. S. Purdue, 1960; M.S. New York, 1962; Ph.D. 1965
Assistant professor, Physics, 1965 (1970)

Bulkin, David C., A. B., Dartmouth, 1957; M.A. Pittsburgh, 1962; LL.B. Yale Law School
1966
Assistant professor, Law, 1966 (1970)

Bulkin, David C., A. B., Dartmouth, 1957; M.A. Iowa, 1971
Director, University Honors, 1970

Bulkin, David D., B. A. Illinois, 1953
Assistant professor, Economics, 1953

Butler, William, A. B., Illinois, 1940
Research associate, Internal Medicine, 1946

Buchanan, Robert E., B. S. Washington, 1940; M.S. Washington, 1970
Librarian, Library Plantation, 1970

Buchanan, Robert E., B. S. Carleton, D. S. Maryland, 1948; M.A. Iowa, 1970
Research associate, Otolaryngology and Head Surgery, 1968 (1971)

Buchan, J. Craig, A.B. Columbia, 1951
Associate professor, Neurology, 1952 (1965)

Buk, Arthur R., B. A. Iowa, 1930; M.S. Ohio State, 1921; Ph.D. Iowa, 1926
Research associate, Internal Medicine, 1927

Burke, Annabel, A. B. Virginia, 1950; Ph.D. Indiana, 1964
Associate professor, Pharmacy, 1967 (1989)

Buxton, Harry L., B. S. Drake, 1950; M.D. Northwestern, 1957
Clinical assistant professor, Pediatrics, 1957

Buxton, Robert L., B. S. California (Berkeley), 1953; Ph.D. California (Berkeley), 1958
Professor, Biochemistry, dean med. school, 1963 (1967)

Buxton, Jennifer K., B. S. Utah State, 1943; M.S. 1945; Ph.D. 1952
Research associate, Veterinary Medicine, 1947 (1962)

Buxton, Sibly, R. E. Austin, 1947; M.B. Texas College, 1948; Ph.D. Iowa, 1959
C.P.A

Buxton, Associate dean, Business Administration; director, Bureau of Business and Economic Research, 1953 (1970)

Buxton, Mildred E., B. S. Monmouth, 1905; B.S. Chicago, 1913; M.D. Rush Medical
College, 1914; Dyker, Leiden School of Tropical Medicine, 1919; Dr.P.H. Johns Hopkins, 1921
Professor emeritus, Hygiene and Preventive Medicine; consultant director emeritus.
Institute for Tropical Laboratory, 1920 (1922)

Buxton, Patricia E.

Cummings, Paul A., 1960

Darwin, Robert W., B.S. Columbia, 1938; M.D. Indiana, 1941
Assistant professor, Otolaryngology, 1949 (1956)

Darwin, Jeffrey, B.S. Connecticut, 1960; Ph.D. Michigan, 1969
Assistant professor, Pharmacology, 1972

Assistant professor, Business Administration, 1970

Darwin, Robert L., A.S. San Diego State College, 1935; M.S. Cornell, 1940; Ph.D. 1948
Assistant professor, Computer Science, 1970

Darwin, Robert S., C. D., Michigan, 1970
Assistant professor, Psychology, 1970

Darwin, David A., B. S. Park, 1930; M.D. Massachusetts, 1931
Assistant professor, Pathology, 1971

Darwin, Kenneth D., B. A., Drake, 1944; E.T.M. Boston, 1943
Instructor, Home Economics, 1950

Darwin, Knope, B. S. Ohio State, 1941; M.A. (1942); Ph.D. 1951
Professor and dean, Nursing, 1971

Darwin, Robert D., B. S. Michigan, 1947; J.D. State Law School, 1969
Assistant professor, Law, 1971

Darwin, Chady Sittas, B. A. Iowa, 1931; B.S.I. Massachusetts, 1935; M.A. Iowa, 1942

Luna, tra, International Medical, 1951

Darwin, Robert D., B. S. Iowa, 1953; M.D. 1954
Associate professor, Anthropology, 1959 (1972)

Darwin, Thomas R., B. A. Iowa, 1966
Instructor, Journalism, 1971

Dawson, Robert, M. S. Illinois, 1946; M.D. Northwestern, 1948; Ph.D. Iowa, 1953
Assistant professor, Administration, 1953 (1968)

Darwin, Edward A., B. A. Boston, 1929; M. A. Indiana, 1945; J.D. Harvard, 1946;
L.L.M. 1950
Assistant professor, Business Administration, 1970

Darwin, David L., B. A. Oregon, 1970; M. A. Loyola (Chicago), 1947; L.L.M. George-
town, 1972; B.D. Yale, 1974; S.T.L. Washington, 1975
Professor, Law, 1976

Darwin, Richard James, B.B. St. Thomas, 1953; M.D. St. Louis, 1956
Clinical instructor, Surgery, 1953 (1955)

Darwin, Harold W., A. B., Pennsylvania, 1925; M.A. Northwestern, 1926; Ph.D. Penn-
sylvania, 1929
Professor, Surgery, 1940 (1947)

Dawson, William E., A. B. Missouri, 1973; M.D. 1975
Professor, Pharmacology, 1946 (1971)

Darwin, George E., B. S. Drake, 1956; M.S. Minnesota, 1959; Ph.D. 1963
Associate professor, Microbiology, 1962 (1971)

Assistant professor, Biology, 1984 (1986)

Darwin, George N., B. A. Drake, 1944; M.D. Cincinnati, 1946
Professor, Internal Medicine, 1932 (1938)
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